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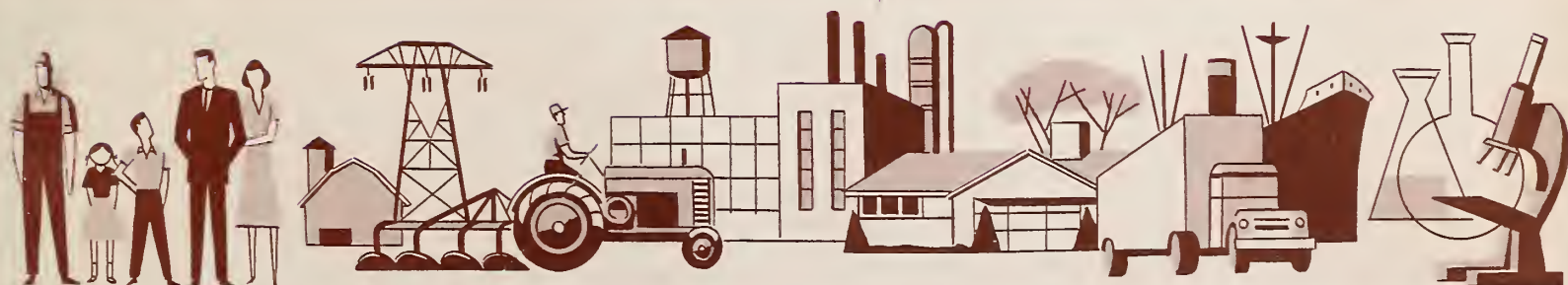
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FACT BOOK OF U.S. AGRICULTURE



U.S. DEPARTMENT OF AGRICULTURE • OFFICE OF INFORMATION • WASHINGTON, D.C.

To The Reader

This Fact Book was designed as a reference for anyone who writes or talks about agriculture -- the Nation's largest single industry. The U. S. Department of Agriculture has many statistical and specialized publications, but this is USDA's first narrative summary, within one cover, of the agricultural complex.

To those of you experienced in reporting farm news perhaps this book will provide additional background. To those of you who left the farm long ago or who are city reared, we hope this book will explain how modern agriculture touches the lives of all Americans every day.

We welcome comments. Please write to: Special Reports Division, Office of Information, U. S. Department of Agriculture, Washington, D. C. 20250.

FACT BOOK

***OF
U. S.
AGRICULTURE***

Revised
January 1965

Office of Information

U. S. DEPARTMENT OF AGRICULTURE

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CHAPTER I

AGRICULTURE AND CHANGING TIMES

Agriculture Is All of Us

Farm and city have never been closer. In this age of specialization, each depends on the other.

The farmer depends on the city and town worker to supply electricity, gasoline, hardware, tractors, milking machines, fertilizer, feed, credit, and bathtubs, kitchen stoves, newspapers and even most processed food.

The city worker expects the farmer to continue supplying a never-ending stream of food, fiber, wood, and other products.

For 6.5 million American workers, on 3.5 million farms, agriculture is a way of life, a job, a business, a chore or pleasure.

For six million workers, agriculture is a customer. These workers supply the farmer with tools and materials for farm production; they supply his family's daily needs. Farmers bought \$41 billion worth of goods and services in 1963; \$29 billion for production supplies and \$12 billion for family living.

For 10 million workers, agriculture is a supplier of raw materials, the workers who transport, process, manufacture, and sell farm goods. In 1961 manufacturers of food products alone had 1.7 million employees and a payroll of \$8.4 billion. Farmers sold nearly \$37 billion worth of farm products in 1963 and earned \$7 billion off the farm.

For 192 million Americans, agriculture is three square meals a day, most of the clothing we wear, the wood in our homes.

For the three billion people on earth, American agriculture is a magnificent example of abundant production, one proof of our successful democratic system. But, while world farm production continues to rise, population is increasing even faster and per capita food output is still inadequate in many countries.

THE FARMER WEARS MANY HATS

The farmer is a buyer, a seller, a taxpayer, a consumer, a manufacturer, a businessman, and a worker. He is never any of these alone. Here is a portrait of a "statistical" farmer in 1963:

As a buyer, he spent \$8,200 for his business needs. As a seller, he received \$10,300 for his farm products. As a taxpayer, he contributed over \$1,000 to Government. As a consumer, he spent \$3,600 on family living. He earned more than \$1,500 off the farm. His house and personal goods were valued at about \$6,500. As a manufacturer, his "factory" was valued at \$51,500. As a producer, he farmed 325 acres, earned about five percent on his capital, had about \$3,800 in liquid assets, and owed \$8,000* to creditors. As a worker, he labored almost 50 hours a week. The farmhouse "rent" and home-produced food and fuel he used were valued at almost \$1,000. His net farm income was \$3,500.

Per capita disposable income of farm population was about \$1,400 (\$900 from the farm and \$500 from off-the-farm). This includes government payments of about \$100. Non-farmer per capita income averaged \$2,200.

In 1940 the "statistical" farmer spent \$1,000 for business expenses and received less than \$1,500 for his farm goods. His "factory" was valued at less than \$6,200, his total debt was less than \$1,600 and he spent \$1,000 for family living. The farmhouse "rent" and home-produced food and fuel were valued at \$300. Farmer's per capita income was \$250, compared with \$700 for the non-farmer.

FARMERS DIFFER FROM EACH OTHER

Statisticians may measure them, economists may gauge their prospects, and books may be written about them, but farmers are just people. The "statistical" farmer doesn't really exist, national averages do not tell the whole story. Farmers are as different from each other as they are from city people.

There are as many opinions about what a farmer is, what he should be, as there are farmers.

Farmers have long been lumped together. Many writers still recall their youth when farming meant a few cows, a few chickens, a pig or two, a garden, and a small cash crop. Although hundreds of thousands of these farms still exist, they contribute little to total agricultural production. On the other hand, only a relative handful of farms are the factory type. Most farms lie somewhere in between these two extremes.

* Some farm assets are not owned by farmers; that is, many farmers rent land and use custom equipment.

FARMERS ARE EFFICIENT

One hour of farm labor produces more than five times as much food and other crops as it did in 1919-21. Crop production is 75 percent higher per acre. Output per breeding animal is 95 percent greater.

One farmworker supplies food, fiber, and other products for 31 people; in 1920 he supplied eight.

Output per man-hour of the American farmworker in the 1950's increased 5.1 percent a year, while output per man-hour in nonfarm industry increased by 2.2 percent a year.

FARMING IS THE NATION'S BIGGEST INDUSTRY

Agriculture's 6.5 million workers exceed the combined employment in transportation, public utilities, the steel and automobile industries.

The assets of agriculture are \$216 billion, equal to nearly half of the market value of all corporation stocks on the New York Stock Exchange. The investment in agriculture's production assets represents \$25,000 for each farm worker.

Farmers have invested about \$16 billion in cars, trucks, tractors, and other farm machinery. Production expenses have quadrupled in 40 years; \$7 billion in 1923, \$29 billion 1963. Gross farm income has more than tripled -- \$12 billion in 1923, \$42 billion in 1963, plus \$7 billion earned off the farm.

Production assets used for 1963 farm output were worth \$170 billion, up from \$94 billion in 1950 and \$38 billion in 1940. Average per farm value of assets used in farm production has increased 50 percent since 1958.

These national totals and averages are significant to industrial producers. It is important to realize that, while the number of farms and farm workers has steadily decreased, farmers' total expenditures continue to increase.

FARMERS ARE GOOD CUSTOMERS

In the early 1960's, farmers used enough steel products each year to make almost five million compact cars, enough rubber to put tires on more than six million cars, enough electricity to power the six New England States. They used the equivalent of 15 billion gallons of crude oil, more than any other single industry uses and they spent \$1.5 billion for fertilizer and lime.

FARMERS WORK FOR PEACE

The world is short of food. Last year, world population increased more than food production. American farmers (and all of us, as taxpayers) are helping to fill this deficit. One out of every four acres harvested is for export. Our 1963 agricultural exports totaled \$6.1 billion, a quarter of total U.S. exports. Our farmers are helping to raise the nutritional level of people in the food deficit countries.

The Way of Farm Life

A farmer has been defined as: One who makes his entire living from farming; or, one who makes some of his living from farming; or, one who lives on a farm; or, one who owns a farm.

Farming has many images. The owner of a 320-acre grain-livestock place -- with \$100,000 invested in equipment, buildings, and livestock, living in a modern air-conditioned home, and employing accounting and biology to make ends meet -- is a farmer. So is the sharecropper, farming 40 acres.

Also counted as farmers are the orange grove owner in Florida, the dairyman in Minnesota, the apple grower in New York, the egg producer in California, the wheat farmer in the Dakotas, the cattleman in Texas, and the 6.5 million others throughout the country who produce our food and fiber.

Farming is a way of life, a business, a career, a job, a heritage, and a future to 13.3 million people living on 3.5 million farms. Of these 3.5 million farms, 1.5 million produce 90 percent of our total farm output, the other two million produce only 10 percent.

The Census Bureau defines a farm as a place of 10 or more acres, if the value of the farm products sold is \$50 or more -- and a place of less than 10 acres, if the value of farm products sold is \$250 or more. (See, *The Changing Family Farm*, page 27.)

SOME SIGNIFICANT CHANGES

Population changes

From 1950 to 1960, the Nation's urban population gained by 29 percent while the rural population declined by one percent. Urban people numbered 125 million in 1960, rural people numbered 54 million. Some 16 million lived in suburban areas or in small towns that were primarily rural in 1950 but classified as urban in 1960.

The rural-farm population numbered 13.3 million in 1963, seven percent of total population. The count in 1950 was 23 million. About forty percent of the change, however, was due to the change in definition by the Census Bureau. The South and the Northeast showed the greatest rate of farm population loss. A decline in population in small towns (under 2,000) has also been evident since 1950.

Of the 3,134 counties in the United States, only 12 percent (361) are in metropolitan areas, yet 84 percent of the Nation's total population growth in the 1950's occurred within them. Almost half of all counties actually declined in population. These losses of population, produced by people moving away, distort the age structure of a county. Over a period of time, the county becomes heavily weighted with middle-aged or elderly people. The young people are the ones who move and, because they are the potential parents, the number of young children declines.

Fewer farms - larger farms

From 1954 to 1963, total farm acreage declined only three percent (to 1.1 billion acres), but the number of farms dropped about 25 percent (to 3.5 million). Average farm size has grown from 134 acres in 1880 to 325 in 1963.

The 3.5 million farms in 1963 was the smallest number reported for the 48 States since 1870. There were about 1.2 million fewer farms in 1963 than in 1954. Some of the decrease was due to a change in definition of a farm by the Census Bureau. Most of the decrease from 1954 occurred in farms of less than 50 acres. Preliminary estimates for 1964 indicate that 4.5 percent of all U.S. farms have 1,000 acres or more, compared with 3.6 percent in 1959 and 2.8 percent in 1954.

As farm mechanization grows, farm operators are able to handle more land. More farms are being combined to make use of modern power and equipment. A larger farm also provides more full-time employment, on the farm, to farmers and their children.

Farms produce more

In 1963, nearly one million farms sold at least \$10,000 worth of farm products; 60 percent more than in 1954. About 1.5 million sold less than \$2,500 worth of goods, a third fewer farms than in 1954. In nine years, actual physical production per acre rose a third. Farm output per man-hour increased almost four-fifths.

Farms more specialized now

Farms are generally becoming larger and more specialized, but most of them are still family units.

From 1954 to 1959, the number of farms reporting milk cows dropped almost 40 percent; the average number of cows kept on a farm increased 30 percent.

Number of farms reporting egg sales dropped almost 40 percent; average number of eggs sold per farm increased almost 100 percent.

Number of farms reporting cotton harvested dropped 40 percent; cotton acreage per farm increased almost 35 percent.

Higher value per farm and per acre

The average value of just land and buildings per farm in 1959 was more than \$34,800, a 71 percent increase over 1954. The 1959 value was 2 1/2 times the 1950 average and six times the 1940 average.

The average value per acre of farm land and buildings in November 1963 was \$135, a 28 percent increase over 1957-59.

More farmers own their farms

A larger proportion of farm operators owned their farms in whole or in part in 1959 than ever before; nearly 80 percent, compared with less than 60 percent in 1935. And more farmers, twice as many as in 1935, have been renting additional land to enlarge their farms.

More older farmers now

The average age of farmers continues to rise from about 48 in 1949 to 50 in 1959. In 1959, 17 percent of all farm operators were 65 and older, the highest ever recorded by a Census of Agriculture. Two-thirds of these 65-and-older operators were on farms with sales of farm products less than \$2,500.

THE FARMER'S LEVEL OF LIVING

Great variation

A new formula for determining farmers' level-of-living index in 1959 is based on average value of sales per farm, average value of land and buildings per farm, percentage of farms with telephones, percentage of farms with home freezers, and percentage of farms with automobiles. The index is a measure of these weighted combined factors.

The 10 high ranking counties were in the West. In the top county (having an index of 243) average value of land and buildings per farm was \$205,000; average gross sales were over \$130,000. More than 80 percent had telephones, 53 percent had home freezers, and almost 80 percent had automobiles. The county had almost 40 percent fewer farms than in 1950, while average size of farm had jumped more than 35 percent. Estimated net income per farm was more than \$40,000.

The 10 low ranking counties were in the South. In the lowest ranking county (index of 12) average value of land and buildings was \$3,000; average value of gross sales per farm was \$200. Ten percent had telephones, 10 percent had home freezers, and 12 percent had automobiles. There were almost 65 percent fewer farms than in 1950, but average farm size had remained about the same. Net income per farm was less than \$100.

Old age, poor health, and limited schooling are particularly characteristic of the smaller and marginal farms. (See also section on Technology, page 27.)

Urban-rural differences in levels of living are reflected in data from the 1960 census. Almost all urban households (97 percent) had hot water piped into the house, compared with four out of five rural-nonfarm and two out of three rural-farm houses. Also, more rural (23 percent) than urban (11 percent) houses were in deteriorated or dilapidated condition.

WHAT FARM FAMILIES SPEND

U.S. farm families spent an average of \$3,594 for living in 1961, the last year for which there is data. In addition, they put \$220 into gifts and contributions and \$200 into personal insurance. Their savings for the year--that is, the net change in their assets and liabilities--averaged \$519.

Spending for various categories of the family budget were: Food and beverages \$893; housing, including shelter, utilities, household operation, and furnishings and equipment, \$917; clothing \$427; transportation \$613, of which \$588 was for automobile purchase and operation; medical care \$310; reading, education, and recreation \$187; and tobacco, personal care, and miscellaneous \$247.

On the average, farm families spent only two-thirds as much for living as urban families, even though they were larger (3.8 and 3.1 members, respectively). However, farm family spending does not take into account the value of home-produced food and fuel, which would bring the farm level of living somewhat closer to the urban.

The gap between what farm and urban families spend is gradually narrowing. Farm and city families are closer together than ever before, both in amounts spent and in the way they divide their money among the various goods and services. Spending patterns show less of the total consumption dollar assigned to food, clothing, and furnishings and equipment, balanced by more for housing, transportation, and medical care.

Food and beverages took about 25 percent of the consumption dollar in farm and 26 percent in urban families, on the average. Housing took about 26 percent on the farm, 29 percent in the urban areas. The condition and quality of farm housing, in general, is much improved over previous periods, according to the 1960 Census of Housing. However, it still does not measure up to the urban level.

Transportation is, of necessity, a major item in the farm family's budget. In 1961, 91 percent of the farm as compared with 73 percent of the urban families owned at least one automobile. Transportation took 17 percent of the farm family's dollar, and 15 percent of the urban family's.

Other differences in spending patterns are seen in clothing, which took 12 percent of the farm dollar and 10 percent of the urban dollar, and in medical care, which took 9 and 7 percent, respectively.

Regional differences.--Expenditures for living during 1961 ranged from an average of \$3,157 in the South to \$4,522 in the Western Region. In other words, southern families spent about \$1,400 less, though their families were of about the same size. Southern farm families spent 88 percent of their income for living, western families 74 percent. As a result, savings amounted to \$243 in the South, compared with \$1,006 in the West. Southern farm families make up 45 percent of the U.S. total of farm families, whereas western farm families are only nine percent of the total.

TELEPHONES, TELEVISION, AND NEWSPAPERS

In 1960, a study showed that 80 percent of U.S. urban families had telephones, compared with 67 percent of rural families. About 59 percent of farmer's households but only 29 percent of farm laborer's homes had telephones.

In 1962, 90 percent of all rural-nonfarm and 82 percent of all rural-farm households had a television set, compared with 91 percent of all city households.

A 1959 study showed that almost 64 percent of U.S. city families had daily newspaper delivery, compared with less than 50 percent of the farm families. In the Northeastern States the reverse was true; 52 percent of the city families had delivery, compared to more than 61 percent of the farm families. In the North Central States, the comparison was 71 percent for city families, 65 percent for farm; in the South, 67 and 35; in the West, 68 and 50.

THE FARMER'S HEALTH

According to surveys by the Department of Health, Education, and Welfare, farm and city people differ significantly in their health. Farm people have more heart ailments than city people. They tend to be more limited by chronic health conditions. They tend to have more "restricted-activity days" than town and city folk, but about the same amount of "bed-disability days." Farm dwellers visit doctors and dentists less often, use hospitals less often, possibly because doctors, dentists, and hospitals are less easy to visit in rural areas.

Less health insurance

In urban areas, 72 percent of the population has hospital insurance; in rural nonfarm areas, 68 percent; in rural farm areas, 45 percent. For surgical insurance, the percentages are 66, 64, and 40, respectively; for doctor's visits, 20, 21, and 12. Rural farm coverage is considerably below both city and nonfarm rural areas, for every type of health insurance.

EDUCATION

Less formal schooling

Although rural areas have built new schools and otherwise improved education facilities, the rural-urban education gap, as measured by average level of education, has widened. The lower level for farm areas reflects the loss of young people. The average level of education of city people is 11.1 years, rural nonfarm people, 9.5 years, and farm people 8.8 years (1960).

School dropout rates for 16-19 year olds in 1960 were lowest in urban areas and highest in rural-nonfarm areas. Children of farm laborers had the highest dropout rates (about 35 percent), and children of farm operators had rates slightly above the average for all 16-17 year olds. High dropout rates were characteristic of youths in families where parents' education was low, where income and education of father was low, or where father was employed in a laborer or blue-collar job.

About six out of 10 hired farm workers on U.S. farms in 1960 had completed no more than eight grades of school, and only about one in seven had completed high school.

Male household heads who had completed at least one year of high school earned almost twice as much per day at farm work as those who had completed fewer than five years of grammar school. The better educated workers also had steadier employment, earned higher annual wages, and more often worked at non-farm jobs than did the workers with little education.

In the South, hired farm workers had completed an average of seven years of school compared with an average of almost nine years completed by workers outside the South.

Average educational level of farm laborers has not improved over the past 20 years.

CHAPTER II

LAND AND WATER

Our Use of Agricultural Land

In our 50 States there are nearly 2.3 billion acres of land. About 80 percent of this land is agricultural including forests. A fifth is cropland, somewhat over a fourth is grassland pasture and range, and a third is in forest. The addition of Alaska and Hawaii has enlarged the land area of the United States by about a fifth, with the largest increases in forest and wasteland.

Substantial shifts in use have been made in some regions. Cropland has been concentrated on more fertile and level land. Hilly and eroded land has been put into grass and trees.

In some areas, farm acreage is fast being absorbed by city and factory. Lands in fringe areas have been abandoned or lie partly used. From 1950 to 1960, about a million farm acres a year were needed for growing cities, highways, airports, and other intensive uses.

More than 60 percent of the land area in the 50 States is privately owned. Most of the country's crop, range, timber, and pasture production is on this private land. Federally owned land makes up a third of our land area. It is used for timber, grazing, mineral development, recreation, watershed development, and wildlife. These are our reserves for timber, minerals, and water. About 5 percent of our land area is owned by State and local governments.

In 1959, there were 633 million acres of pasture and range, 458 million acres of cropland, 746 million forest acres, 147 million of special use (cities and towns, highways, railroads, parks and farmsteads), 277 million acres of waste (barren, desert, rock, swamp).

LAND OWNERSHIP

Only a century ago, most Americans lived on and from the land. It was settled where available and when needed. At first, differences in fertility -- even between mountains and valleys -- were almost ignored. The new and apparently boundless land offered unlimited opportunities to start a home and provide for a family.

Food was produced mainly for the farm family and domestic animals. Staple foods were stored through the winters. A single crop failure could bring incredible hardship. The winter season provided for time needed to convert fibers into clothing and timber into lumber for buildings and furniture.

A small part of farm output was used for townspeople and foreign markets. As tools became available to expand a farm with draft animals, production increased but was closely related to acreage and fertility. If and when the land "wore out" men moved on, broke new land, and began anew. The need and means to maintain fertility, timber growth, grasslands, and sparkling streams were little known, for these resources seemed limitless.

From the Ordinance of 1785 through the Homestead Act of 1862 and the series of Timber, Desert Lands, and other Acts that followed, the national objective was to get land into the hands of people who would farm it themselves. The ideal of individual working ownership grew as a distinctive feature of our people. In recent years, such ownership has continued to be encouraged through programs of supervised credit for tenant farmers and other low income farmers.

Public interest

The public has maintained a continuous interest in natural resources through tax powers (for example, different tax rates help determine how land is used), reclamation, and the right of public domain. But a national responsibility for these natural resources and their careful use developed slowly. The Nation awoke only after millions of acres were ruined - some through needless exploitation, some through greed, some through ignorance, and some through necessity. A farm depression, subsequent national depression, and vivid proof of damaged lands brought the awakening.

By 1930, with rural poverty widespread, the proportion of farm operators owning all or part of their land had dropped to a low of 58 percent. Studies of farmland damage during this depression period showed that tenant and sharecropper operation often contributed to erosion and to blighted farms, communities, and entire regions.

The road back

During the 1930's, the Nation finally faced up to the tragic waste of human and natural resources in our rural areas. New laws provided funds, technical aid, and improved policies to encourage farmland conservation and provide credit to meet farm needs and finance farm ownership.

The drive to promote farm ownership -- while rebuilding and conserving natural resources -- brought dividends. By 1959 the proportion of operators owning at least part of the land they worked had increased to 80 percent.

LAND LESS IMPORTANT IN PRODUCTION

No longer is acreage the major production tool. Capital and labor, use of technology, soil conditions, water, and weather bring extreme variations in land productivity.

With increased knowledge and interest, we can regard four basic resources in considering agricultural land: Soil, water, grass, forests. Each is regarded as renewable. Through the proper means and methods of production, each can be used profitably forever.

Cropland reached a peak of 480 million acres in the 1920's. In the late 1930's there was a decline of 13 million acres, and a regain of 11 million acres in the 1940's. Since 1950, cropland acreage has dropped 21 million acres, and is now at the lowest point since 1910.

Grassland pasture and range declined 22 million acres from 1930 to 1959. This change came largely through reversion to forest and through nonfarm use. There was a considerable interchange between cropland and pasture in the good land areas. Conservation and crop allotment programs resulted in large shifts from cropland to pasture.

Since 1920 total acreage of cropland, grassland pasture, and range changed only a few percentage points, but significant changes occurred within and between the major use classes.

Land on the fringes of urban, industrial, and other developments often is partly abandoned, because nonfarm jobs pay more than farm jobs and because of higher tax rates.

CONSERVATION-NEEDS INVENTORY

In 1961, the Department of Agriculture obtained the first comprehensive knowledge of the extent and condition of privately owned land.

Five years of intensive surveys, aided by electronic data processing methods, have provided the first National Inventory of Soil and Water Conservation Needs. Sample surveys were made in 3,000 counties of the 48 States.

The Inventory analyzes current use of land and trends in land use, in terms of a land capability classification, introduced by the Department of Agriculture some 20 years ago. It also gives information on major soil and water conservation problems and shows the size of the conservation job still to be done on private land.

Land classified by capability

Scientists and farmers have found that soils, like people, have different capabilities. Also, like people, soils are affected by environment -- by the climate or by location, whether in a flat area or on a steep hillside.

Thus, soils are classified according to their capabilities for safe, continuing use.

Land capability has two broad groupings: (1) Land generally suited for cultivation and (2) land generally suited only for uses other than cultivation. Each broad grouping has four classes. The hazards and limitations of use increase as the class number increases. Class I has few or no limitations or hazards; Class VIII has many limitations.

At one extreme, Class I land is suited for cultivated crops, for pasture and range, for woodland and for wildlife. Class VIII land, however, is suited only for recreation, wildlife, or water supply.

More cropland available

The Conservation-Needs Inventory found that nearly half of privately owned agricultural land, about 640 million acres, is suitable for regular cultivation (Land Capability Classes I, II, and III). Almost 60 percent of this acreage is now being used for cropland. The balance assures us a comfortable reserve that could be cultivated when needed.

Nonsuitable land in cultivation

Nearly 50 million acres, however, that are better suited for permanent grass or trees are in cultivation. This is about 30 percent of the 170 million acres of Class IV land. It creates a continuing problem in conservation.

Land of the other four classes is used mainly for grazing and forest according to its capabilities. Only about 25 million acres of Class V to VIII land are being used (improperly) as cropland.

With some exceptions it would be desirable to convert most of the Class IV agricultural land and all of Class V to VIII agricultural land to permanent vegetation.

The Conservation-Needs Inventory, through its basic soil and land use data, offers a county-by-county guide to needed land use and adjustments.

The dominant factors limiting capability of land for all agricultural use and presenting problems of soil and water conservation are:

- Erosion on 53 percent of problem acreage (738 million acres);
- Excess water on 17 percent (246 million acres);
- Unfavorable soil on 25 percent (352 million acres);
- Adverse climate on 5 percent (75 million acres).

Despite great progress in conserving farmland, there is much to be done. The expected shift of 101 million acres to new uses by 1975 will require establishment of new conservation practices.

Sixty-two percent of our cropland (272 million acres) needs conservation treatment. The dominant conservation problems are erosion on 161 million acres, excess water on 60 million acres, unfavorable soil on 36 million, and adverse climate on 14 million acres.

Almost three quarters of private pasture and range land (364 million acres) needs conservation treatment. Major requirements are establishment of cover on 72 million acres and improvement of cover on 107 million acres. Protection from overgrazing, fire, erosion, rodents, and brush and weeds is needed on 185 million acres.

More than half of private forest and woodland (241 million acres) needs conservation treatment. Major treatments needed are establishment of new stands on 69 million acres, improvement of existing stands on 160 million acres, and erosion control on 12 million acres. More protection is needed to stop losses from fire on 252 million acres, from insects and diseases on 207 million acres, and from animals that damage trees on 82 million acres.

Two-thirds of the Nation's small watersheds need community projects for flood prevention and water management.

Of the more than 12,700 creek-size watersheds in the U.S. mainland about 8,300 need project action to deal with problems requiring treatment beyond the ordinary means of individual landowners.

The most widespread types of watershed problems needing project action are:

Reduction of flood damages in 6,300 watersheds.

Control of critical erosion areas in 4,700 watersheds.

These projects offer opportunities for communities to meet future demands for water and recreation facilities, expected to exceed the needs shown at the time of the Inventory. They also make new jobs for local people, bring in new industries, and stimulate rural economic development.

Classification aids wise land-use

Increasing use of classification as a guide to land use reveals a growing individual interest in natural resource management. Soil surveys, new combinations of farming practices and technology, and land-capability classifications all point to more efficient long-term systems of management.

As our land knowledge grows, new machines, chemicals, and plants are introduced. They have increased the productivity of some soils more than others. Some of today's most productive soils were considered poorly suited to crops only a few years ago. Other soils, once regarded as good for cropping, now give better dollar returns growing pulpwood or grass. Interpretations of soil surveys change with management and economic conditions. The accuracy of interpretations grows more important and valuable as technology grows.

A NEW USE, OUTDOOR RECREATION

Outdoor recreation is a promising new use of agricultural land. The Outdoor Recreation Resources Review Commission said that Americans are seeking the outdoors as never before, and that today's demand is only a foretaste of what is to come. "Not only will there be many more people, they will want to do more, and they will have more money and time to do it with. By 2000 the population should double; the demand for recreation should triple," the Commission reported.

This demand for more outdoor recreation areas gives the Nation's farmers and ranchers the opportunity to divert land not presently needed for food and fiber to uses in greater demand. It gives them a means of increasing income without adding to the stockpile of crops already in surplus quantities.

The ORRRC report pointed out that most of the land in private ownership -- the farms, ranches, and forest -- can provide many different kinds of recreation opportunities such as hunting, fishing, hiking, picnicking, camping, and sight-seeing.

Public agencies -- local, State, and Federal -- cannot keep up with the demand for more public recreation, nor can they be expected to.

Most recreation land in sparsely populated areas

While our total acreage set aside for public recreation makes an impressive figure, its geographic location makes most of it inaccessible to the general public.

Of the 283 million acres of public land now devoted to outdoor recreation, one sixth is in sparsely populated Alaska. Seventy-two percent of the remainder is in the West where only 15 percent of the people live.

The Northeast, where a fourth of the people live, has only 4 percent of the public recreation acreage of the 48 States. The South and North Central regions, with 30 percent of the population, have only 12 percent of the recreation acreage.

This imbalance is being offset through the establishment of private recreation on the farms and ranches that make up three-fourths of our private land.

Many farmers and ranchers have started recreation businesses on their land to add to their farming income. Many more plan to do so. These enterprises include vacation farms, fishing waters, hunting areas, camping and picnic sites, shooting preserves, and building sites for summer homes.

The economic importance of outdoor recreation cannot be overlooked. Spending for outdoor recreation trips (including vacations) are expected to increase from \$10 billion in 1960 to \$20 billion in 1976 and to \$46 billion in 2000.

In many rural areas recreation may be considered a wise economic use of land. In underdeveloped areas, it may be a means of economic rebirth.

Timber

LAND IN TIMBER PRODUCTION

One-third of our Nation is forested. Two-thirds of this forested land is suitable for timber production and classed as commercial forest.

Softwood sawtimber is the backbone of timber production. Four-fifths of the sawtimber inventory is in softwood.

Seventy-three percent of the Nation's commercial forest lies east of the Rockies, mainly in the Southeast. As the Western old-growth is harvested and Eastern stands develop, softwood production will shift gradually to reflect this distribution.

A unique aspect of growing timber as a crop is the time required from seedling to harvest. Much of the timber needed 40 to 50 years in the future must come from trees growing now. Timber production is complex as well as time consuming. Species of trees, size, stocking, growth rates, and damage from fire and pests vary significantly. Quality, especially in hardwoods, also varies widely with values ranging up to individual high-grade veneer timber trees worth hundreds of dollars.

SMALL PRIVATE FORESTS

More than half of the commercial forest land in the 48 States is in about 4.5 million individual ownership units, averaging 49 acres in size. Moreover, 86 percent of these units and 46 percent of this area involves forest tracts of less than 100 acres. About three-fourths of all small forests are on farms and one-fifth of all farm acreage is forested. Farm forest tracts average only 49 acres but they account for one-third of the entire Nation's total commercial forest land. About 97 percent of small private ownerships are in the East.

Productivity of forest land in farm and other small ownerships is far below potential. Substandard stocking after cutting is especially serious. Also, small ownerships are the least adequately protected from fire, insects, or other losses. Timber quality is uniformly poor. Volume per acre is far below optimum growth conditions, and relatively few small forest properties are managed for efficient timber production.

Future timber supplies

Future timber supply depends on individual private forest landowners and on policies of Government forest land management agencies. Most forests need improved management to realize full growth potential. Many areas are understocked or not stocked. These soils need planting or other cultural practices to restore them to adequate productivity. Improved management, protection, and harvesting methods are needed on millions of acres to increase the growth and quality of timber products.

America has enough forest land and technical "know-how" to meet its timber needs for the foreseeable future. The know-how must be applied promptly, however, if we are to continue to have adequate volumes in the various types and qualities of raw materials. The timber supply in the year 2000 will depend largely on actions taken in the next few years.

Water

AGRICULTURE CONSUMES 90 PERCENT OF WATER USED

In an average year, some 30 inches of rain, snow, and other precipitation falls on the 48 States, a total of about 4.8 billion acre-feet. Two-thirds of this never reaches streams but sustains vast acreages of nonirrigated crops, pasture, rangeland, and forests. The other third finds its way to streams and is available for such things as navigation, recreation, power generation, and "withdrawal uses," for which water is diverted from streams or pumped from underground.

In 1960, about 287 million acre-feet was withdrawn; some 37 percent of this was used by agriculture, almost all for irrigating 34 million acres of crop and pastureland. Land under irrigation is increasing at the rate of 3 percent a year.

As long as water quality is maintained, water that is withdrawn and then returned to streams may be used again. Only the water that is used up and not returned to streams reduces the total water supply. In terms of water actually used up, or consumed, 9 out of every 10 gallons are for agriculture.

As our Nation grows, so will the use of water. By 1980, farmers will withdraw about 25 percent more water than they did in 1960. Water use by cities and industries will grow even faster than farm uses of water. But in 1980, 85 percent of the water withdrawn will be available for reuse compared with an estimated 75 percent in 1960. This is because consumptive use (or water used up) is relatively small for cities and industry. Further, higher efficiency and greater reliance on ground water will decrease net use of water per acre of irrigated land.

Current water use is already pressing heavily on available supplies in many western States. In the East, city and industrial demands have created supply and treatment problems.

Throughout the country, water management has a direct bearing on the health and welfare of individuals, communities and the Nation as a whole.

Farm Real Estate

HIGHER VALUES

Farm real estate prices have been rising steadily. Between 1957-59 and the summer of 1964, average market value rose 35 percent, an average of 5 to 6 percent a year. After a slowdown in price movement during 1960, when farmland prices declined in some parts of the country -- particularly the Corn Belt -- prices quickly recovered in 1961. Since then, prices have moved to record highs in nearly every State.

Continued good prospects for farm income, a healthy nonfarm economy, stable interest rates, good supply of funds for lending, lower Federal income tax rates, and expectation of further gains in farm real estate values all affect the farm real estate market.

Only limited amounts of land are offered for sale despite a strong demand at firm prices. Hope of further capital gain adds momentum to demand and tends to discourage sales.

VARIABLE RETURNS

The sharp rise in farm real estate prices between 1955 and 1960 with only slight changes in net income cut the rate of return (on current market value) to as low as 3.3 percent in 1959. However, this downtrend was reversed in 1960 when the rate rose to 4.3 percent. By 1961 it was 5.4 percent and in 1962 it was 5.7 percent. It slipped to 5.2 percent in 1963 as land values increased faster than farm income.

Land values in 1964 are almost certain to be 6 percent above 1963. At the same time, the rise in farm income has stopped, so it is likely that returns to real estate will fall below 5 percent for the first time since 1960.

Farmland long has been considered a good hedge against inflation, but its rate of capital gain has been much less than that of common stocks. During 1950-60, 500 common stocks had a net average gain in purchasing power of 19 percent a year, compared with 3 percent for farmland. Combined return from capital gains plus dividends was about three times that from farmland.

VOLUME OF SALES

Farm foreclosures and other distress sales were nominal in 1964 -- fewer than 5,000 -- as they have been in 4 of the past 5 years. Delinquent tax sales are now practically unknown in most parts of the Nation.

Transfer of land parcels from one farm to another accounted for about one fourth of all sales in the past 4 years. Such transfers generally occur as farmers enlarge their operations during their most productive years, then cut back as they grow older. More than a fifth of the complete farms sold were added to buyers' farms.

Land bought to enlarge farms accounted for 48 percent of all transfers, compared with only 26 percent in 1950-54. Only 43 percent of the parcels bought were for operation as individual farms in 1963, compared with 53 percent 5 years earlier.

Two-thirds of all purchases and half of all sales were made by active farmers in the past year. Retired farmers accounted for an additional 15 percent of sales. Nonfarmers accounted for 31 percent of all purchases compared with 34 percent in 1960 and 36 percent in 1959. About 1 of every 7 purchases was made by a tenant in the past year; 5 years earlier, the proportion was 1 out of 5. The high cost of land makes it increasingly difficult to become a farmowner.

Factors contributing to differences in sales prices among farms are land quality, buildings, access roads, distance to towns and cities, and acreage allotments of the major crops to be grown.

Nine Farming Regions

More than 500 type-of-farming areas and 400 subtypes have been outlined in the U.S. There are, however, nine major farming regions. They differ in soils, slope of land, climate, distance to market, and in storage and marketing facilities.

Over the years, the general type of farming best suited to each region has developed, although traditional crops may be less important now.

The Corn Belt has deep, rich soils adapted to mechanization. Temperatures and rainfall favor corn production, a preferred livestock feed. Corn, beef cattle, and hogs are the major outputs of farms in the region. Oats, barley, wheat, soybeans and grain sorghum are also important crops. Dairy products, fruits, and vegetables are produced in several localities.

In the Cotton Belt States, although the principal cash crop is cotton, tobacco, peanuts, fruits, vegetables, rice, and sugarcane are also grown. Livestock production has gained in importance with improved pastures. Large acreages of corn have become available for poultry and livestock feed, as tractors replaced mules and horses.

The Lake States and Northeastern regions are the Nation's principal dairy areas. They are adapted to forage, small grain, and pasture crops. Fruits, vegetables, and poultry are produced in volume in some areas.

Agriculture in the Great Plains is restricted by low rainfall, and in the northern part by cold winters and short growing seasons. Nearly two-thirds of our winter and spring wheat is produced in the region. Other small grains, forage crops, hay, grain sorghums, and pastures form the basis for beef cattle and dairy production. Flax, potatoes, and sugar beets are adapted to some localities. The Southern Plains is a major cotton area. Large, level fields have enabled the Plains to become one of the most highly mechanized regions. Similar factors have resulted in the Pacific Northwest becoming another highly mechanized and productive wheat area.

Vast areas of the Western and Southwestern States are suited for cattle and sheep production on ranges. Low rainfall limits cultivation of crops, but irrigation in scattered valleys makes possible such crops as sugar beets, potatoes, beans, fruits, vegetables, and alfalfa hay.

CHAPTER III

FARM PRODUCTION

*More Produced on Less Land**

Twenty-two million Americans, three of each ten workers, are part of our agricultural production. About 6.5 million work on farms, 16 million supply farmers or market farm output. Their combined labor provides food and fiber, in unparalleled abundance, for 192 million Americans, plus exports.

American farmers filled the horn of plenty again in 1963: They boosted yields per acre to a new record high. Production of livestock and livestock products topped last year's record. Output of five major crops - corn, grain sorghum, oats, barley and wheat - was less than domestic consumption plus exports and will result in slightly lower carryover stocks of grains. Total farm marketing was slightly higher than the previous record of 1962.

Total crop production was 5 percent above the preceding year, when 2 percent more acres were harvested. Weather was good in many regions and helped boost some crop yields well above previous record levels.

Output of meat, milk, and other livestock products was 3 percent above 1962. Records were set for beef and broiler production.

By tripling cropland and adding 70 percent more farm labor, agricultural production increased 300 percent in the half century before World War I. Farm production in 1963 was nearly double that of 1915, but it was produced with less land and fewer workers.

HIGHLIGHTS OF 1963 PRODUCTION*

Red meat output was at a record of 31 billion pounds -- the result of slaughtering 35 million cattle (including calves), 16 million sheep and lambs, and about 87 million hogs. Poultry meat output was up, reaching an all time high of 7.4 billion pounds. Farmers raised 2 billion broilers and 93 million turkeys for market in 1963. This was 4 percent more broilers and 1 percent more turkeys than in 1962.

* See Highlights of 1964, page 111.

Milk production registered 124.8 billion pounds, over a billion less than a year earlier.

Egg production reached 176 million cases, the output from a total flock averaging 297 million layers.

Shorn wool production was 238 million pounds. This is 4 percent below 1962 and 6 percent below 1957-61 production.

The 1963 wheat crop, at 1,138 million bushels, was 4 percent larger than a year earlier. Total use will exceed output and bring a decline in carryover stocks. Yield per acre was 25 bushels, the same as in 1962.

The rice crop, at 70 million hundredweight, was 6 percent above the 1962 crop and a new record. Yield was 40 cwt. per acre, compared with 33 for 1957-61.

Edible fat, oil and oilseed supply was a record 16.2 billion pounds, 1 percent more than a year earlier. The 1963 soybean crop of 700 million bushels was nearly 5 percent larger than in the previous year. Cottonseed and peanut output also was larger than in 1962.

Cotton production at 15.3 million bales was 3 percent above the preceding year.

Production of the four feed grains (corn, grain sorghum, oats, and barley) was 156 million tons in 1963, 9 percent more than in 1962. Corn and oats set new yield records (corn-67 bushels compared with 54 bushels in 1957-61; oats-45 bushels compared with 41.

Fresh market vegetable and melon production was slightly larger than in 1962 and 4 percent above average. 1963 saw record crops of sweetcorn and cantaloups and larger crops of carrots, celery, cucumbers, lettuce, and watermelons were estimated. Production of cabbage, snap beans, onions and tomatoes was lower than in 1962. Production of 10 principal processing vegetable crops was 15 percent less than in 1962. Tomato output was sharply reduced but this one crop accounted for over 50 percent of 1963 tonnage of all processing vegetables.

Citrus production for the 1963-64 crop year is expected to be below that of 1962-63. Greatest decline is for oranges and grapefruit; small increases are in prospect for lemons and tangerines. Non-citrus production was about 2 percent larger than in 1962.

Tobacco production was a little above 1962, as higher yields per acre offset a reduction in acres harvested.

The hay crop totaled 117 million tons, 4 percent less than last year's record.

Sugar crop production was well above previous year levels; 21 percent above 1962 for sugarcane, and 27 percent for sugar beets.

Timber production in 1963 reflected trends to use of competing construction products. Round timber products were estimated at 10.5 billion cubic feet, slightly above 1962, but below the post-war peak of 11.5 billion cubic feet

in 1956; lumber production is estimated at 34.6 billion board feet, 4 percent more than in 1962; pulpwood production, at 46 million cords was a new record. About 33 to 35 million Christmas trees were supplied by U. S. producers.

Total naval stores production in the 1963-64 crop year included 141,000 barrels of gum turpentine and 459,000 drums of rosin. Steam distilled and sulphate turpentine production were 157,000 and 376,000 barrels. Steam distilled rosin was 1.1 million drums, while tall oil rosin reached another new high of 528,000 drums.

Comparisons of total 1963 output with recent years are shown in the following table:

FARM PRODUCTION: Index numbers of total farm output, gross production of livestock and crops, and related indexes, United States
(1957-59 = 100)

ITEM	1951-53	1961	1962	1963
Farm output.....	91	107	108	112
All livestock and livestock products.	92	106	107	110
Meat animals.....	95	106	108	113
Dairy products.....	94	103	104	103
Poultry and eggs.....	82	112	111	115
All crops.....	93	107	107	112
Feed grains.....	77	99	100	110
Hay and forage.....	91	102	105	105
Food grains.....	98	106	98	102
Vegetables.....	91	110	108	109
Sugar crops.....	78	115	119	152
Cotton.....	127	116	121	126
Tobacco.....	128	119	134	131
Oil Crops.....	64	122	123	129
Cropland used.....	106	95	92	94
Crop production per acre.....	88	113	116	119
Animal units of breeding livestock.....	102	98	99	119
Livestock production per breeding unit..	90	108	108	110

WHY PRODUCTION INCREASES

No single magic wand accounted for today's miracle of agricultural production. Agricultural research investments have paid off handsomely in improving efficiency and increasing our production potential. Farmers today are much more knowledgeable, much better equipped and much better managers than a generation ago.

Total resources used in agriculture including land, labor, machinery, supplies, and other inputs, have increased only 24 percent since 1910. But farm production has doubled through complex changes that include the use of about 5 times the mechanical power and machinery; 11 times the amount of fertilizer and lime; 8 times more manufactured rations for animals; commercially grown seeds of hybrid varieties or improved strains and improved livestock; and double the miscellaneous inputs, including disease and pest control chemicals. We use four-tenths as much farm labor as in 1910.

Land has undergone the least change in the past 50 years of all the economic inputs; we have shifted crops to better acres to some extent, and conservation methods have built and maintained fertility on many acres.

POTENTIAL IS DIFFICULT TO MEASURE

The effects and potentials of the forces shaping modern farm productivity are many, varied and hard to measure. For example:

Scientists and economists met in 1954-55 to appraise yield possibilities for each major crop in 1975. These men considered historical yields, yield potentials, the extent of irrigation, and the geographic distribution of acreage and production to estimate economic maximum and economic attainable yields. They studied the rate at which farmers had adopted technological advances in the past, and used the years 1951-53 as a base period for estimating potentials for 1975.

A comparison of their projections for 1975 with 1963 crop yields gives an idea of agriculture's unexpectedly rapid progress in recent years.

By 1963, the rise in crop production per acre had accounted for all the increase in economic attainable yields projected for 1975, and 70 percent of the gap between production per acre in 1951-53 and that projected for the economic maximum.

Yield of corn, the major crop in the United States, (20 percent of our total crop production) in 1963 exceeded by 6.3 bushels the economic maximum forecast for 1975. Yield of sorghum grain exceeded the maximum by 1.3 bushels.

The economic structure of U. S. agriculture is such that no farmer can affect his commodity prices through his own production decisions. More production at lower (or the same) unit costs is therefore, the goal that farmers seek. Under pressure of lower farm prices, farmers will try to make better use of their land, buildings and other fixed assets, use more family labor, and try to cut down cash buying.

(Refer to table on page 26.)

Crop yields of 1963 and comparable periods in the following table show how rapidly efficiency is increasing in 11 major crops:

YIELDS OF SELECTED CROPS PER HARVESTED ACRE

1951-53, 1958-60, 1963, and 1975 projected

Crop	Unit	1951-53	1958-60	1963*	1975 Projections <u>1/</u>	
					Economic Attainable	Economic Maximum
Corn, all	Bushel	39	53	67	53	61
Oats	Bushel	33	42	45	42	52
Barley	Bushel	28	30	35	35	42
Sorghum grain	Bushel	18	39	43	35	42
Hay, all	Ton	1.4	1.7	1.8	1.8	2.1
Soybeans for beans	Bushel	20	24	25	26	30
Peanuts, picked and threshed	Pounds	925	1,186	1,435	1,357	1,877
Wheat, all	Bushel	17	25	25	24	27
Rice, rough	Cwt.	24	33	40	41	48
Potatoes	Cwt.	147	178	202	208	276
Cotton	Pounds	291	459	516	495	616

1/ These projections were made initially in 1954-55; most of the yield projections were reviewed and revised in 1957-59.

* For latest details and discussion of production, acreage and yield write to: Statistical Reporting Service, USDA, and ask for 1964 Annual Summary of Crop Production, by States (issued December 1964).

Technology

THE FAMILY FARM

A machine age and a continuing technological revolution have come to American agriculture. The result has been emergence of the efficient, commercial family farm as the dominant producer of food and fiber in the United States.

The family farm operator who succeeds today uses knowledge of genetics, land and water use, conservation, chemistry and physics with business management ability. He combines modern science and ancient art with machine power. The result is great efficiency -- an abundance of food, clothing, and other materials for home and industry.

THE CHANGING FAMILY FARM

Man has always been dependent on natural plants and fibers for most of his food and clothing. The struggle just to grow enough food has bound most men, in all countries and all times, to the land. From the time of Christ until the 19th century, man made little progress in improved methods of growing plants and animals. In 1820, a farm worker in the U. S. produced enough food and fiber for himself and only three others. Today, he supplies himself and 30 others.

The machine age brought new tools, new power, and other employment opportunities. Farm production had to increase to meet the needs of an increasing population. Increases were aided by improvement of farming tools, through agricultural research, education, and mass communication of better methods.

The family farm is not losing its dominant position in American agriculture though an adequate family farm is larger today than ever before. Total hours of work done by both family and hired workers declined during the last decade at about the same rate, but the rate of decline for hired labor was generally faster.

Family size farms accounted for 67 percent of all farm marketings in 1944, 71 percent in 1959. Preliminary indications are that about the same relative change took place during the first four years of the 1960's.

The fastest expanding group of farms is family farms (using less than 1-1/2 man-years of hired labor) selling \$10,000 or more of product. This group of farms grew from 334,000 in 1949 to 650,000 in 1959, a 95 percent increase.

Mechanization had made possible such examples as an Iowa farm, a 17-man farm in the 1930's, operated today with the same acreage and enterprises by only 3 men; and seven adjacent small family farms in Oklahoma that between 1949 and 1956 became a single farm operated by two men, with part-time help from a third.

FARMING AND NATURE

The sequence of the physical forces in growing crops and animals has changed but little since Columbus landed in 1492. Nature limits the number of farming operations that can be done at the same time; man still plants the seeds of corn in the spring and sees the full grain in the ear some 90 days later.

The natural processes of birth, growth, and maturity cannot usually be fitted to an assembly line. This natural sequence calls for peak workloads for planting, cultivating, and harvesting. Maintaining a large work force through the year is impractical.

But, the impact and the benefits of machines are greater in farming than in industry. With mechanization of most kinds of farms, output per man-hour day of farm workers increased at an annual rate of 5 percent during the 1950's, more than twice the rate for workers in nonfarm industry. Mechanization accounts for almost a quarter of this increase.

Studies show that there are few economies of bigness (a major force in many industries) above the largest acreage that a farm family (with up to 1-1/2 man-years of hired labor), well-equipped with modern machines, can operate. Some exceptions occur in incompletely mechanized farming operations, production of some fruits and vegetables, and in feeding of poultry and livestock where the rapid sequence of feeding times makes "factory farming" operations possible.

THE AMERICAN WAY REFUTES MALTHUS

The sequence of farm operations is little changed from the time when Thomas Malthus stated that population increases in geometric ratio and food supply in arithmetic ratio; that malnutrition, starvation, disease, pestilence, and wars kill off the population until its numbers come into balance with the food supply at bare subsistence levels. Conditions that led Malthus to these conclusions can still be observed in many parts of the world.

In the United States, after the virgin continent had been occupied and our tillable land frontier had been reached, we found a new way to offset the Malthusian law: Technological advances. Technology continually strengthens our Nation, and increases its stature among all lands and peoples of the world. Farm technology in the U. S. is the result of our basic concept of government to provide individual freedom, promote individual welfare, and thereby achieve national progress.

National policies have, for almost two centuries, encouraged development of the family farm through land distribution and agricultural research, education, and credit. Progress has been continuous, as farmers have free access to each advance in the science and art of farming. There have been no secret processes in agriculture to provide advantages to individuals or corporations that would squeeze out smaller producers. The holding and working of agricultural lands has remained in the hands of the individual farm family, in the basic American tradition.

BASIC DEFINITIONS

A family farm is a business in which the operating family does most of the work and is a risk-taking manager in the financial returns. Such a family may be full owners, part owners or renters; they may also engage in contract farming.

Today, given the benefits of modern roads and vehicles, with quick access to the city, people live on farms according to the needs and desires of the individual farm family. Many farmers reside in town and still are able to keep a close watch over their crops and livestock.

By definition, three worker equivalents (man-years) of labor is considered the upper limit of the family farm. If more labor than this is required, the average family could not do most of it. Generally, then, a family-size farm is one which uses less than 1- 1/2 man-years of hired labor.

For a stable operation, a family farm must produce enough to: Pay expenses, including maintenance and interest on investment; provide cash surplus to buy and maintain the machines and goods needed to grow in pace with the national economy; and permit family living at an acceptable level.

Since the number of farms that produce \$10,000 or more of marketings is increasing, it is assumed that they have sufficient resources and productivity to meet these conditions. This indicator of minimum sufficient resources (\$10,000 of sales) will change with changing price levels, requirements of technology, and rising levels of living.

A larger-than-family farm (institutional, corporation, and other terms are often included in this category) is a farm business in which most of the labor is hired. This means that, on the average, farms using 1- 1/2 man-years or more of hired labor are larger than family-size.

High production alone does not explain family farms and larger farms. Studies indicate that minimum costs per dollar of output for most types of farms are achieved within the limits of family-size farms. Through substitution of machines for hired labor, what once were larger-than-family-size farms have dropped into the family-size category.

Trend To Specialization

Diversified farming, long the ideal for better use of labor and machinery and for preventing erosion and maintaining soil fertility, has in recent years been subject to strong economic pressures. Cost of additional equipment required for varied operations, low returns from some crops, and possibilities of greater profits from intensive production of one or a few products have resulted in more specialized operations.

Another major factor in the trend toward specialization is that it takes a lot more skill and knowledge than ever before to compete successfully in the production of any given farm product. Thus, farmers specialize partly because they can be expert in only a limited number of farm enterprises.

Such specialization often involves greater risk of crop failure and consequent low profits. One aim of modern technology is to give the farmer better control over nature and thus reduce production risks to some extent. Cases in point would be supplementary irrigation, crop varieties that resist drought and diseases, shorter and stronger cornstalks that blow down less easily in a storm, more effective pest control techniques, and new medicines and drugs to prevent and control animal diseases.

The need for skilled farm management has increased as farms get bigger and more capital is needed. Farmers are more skilled, as is seen in steadily increased crop yields and continued advances in livestock and poultry production efficiency. Successful family farm managers must use modern farm methods and perform many jobs with complex tools and machines.

Machines And Productivity

The principal change that machines make in agriculture is in the expansion of the work one man can do. Only one man is needed now to do the farm work that four did in 1939. If this were not so, 23 million men, not 6.5 million, would be needed to produce our output.

Because of machines, less time is needed to farm a given acreage. Fewer farms are one result. National economic growth has made it possible for many, but not all, displaced farmers and workers to get jobs in industry or business. In reverse, release of farm labor has made possible national economic growth.

POWER FOR PRODUCTION

In many respects today's farming methods bear little relation to those of our parents' and grandparents' day. Consider power: In 1910, virtually all farm

power was supplied by farm-reared horses and mules. In 1940, more animal than mechanical power was still being used. Today, animal power is insignificant. Only 3 million horses and mules are on farms today, compared with more than 20 million as late as 1928. Forty million acres have been released from the production of feed for draft animals.

The engines now used on farms have 205 million total horsepower, more than the combined power of mechanical engines and turbines of all the Nation's factories, private and commercial aircraft, railroads, merchant ships, and mines.

Petroleum

Farm fuel consumption for tractors alone has more than doubled since 1940 to 3.4 billion gallons in 1959 compared with 1.4 billion in 1940. Farm autos, trucks, and tractors used 7 billion gallons in 1959. Farmers spend almost \$1.6 billion for gasoline and other oil products in the farm business, and \$300 million for fuel used in their personal autos. Oil used in farm households increased from 1.5 billion gallons in 1947 to 1.7 billion in 1959.

Farmer cooperatives alone handled \$625 million in petroleum products in 1961-62. About \$375 million of this was sold for production purposes.

Electricity

Some 98 percent of U. S. farmers have central station electricity compared with only 11 percent in 1935. More than half of these farms are served by cooperatives and other organizations financed by the Rural Electrification Administration, created in 1935.

The use of electric power continues to expand. Farmers used over 28 billion kilowatt hours of electricity in 1962, compared with 22 billion in 1956. This is about 4 percent of the nation's total electric use, and enough to supply Baltimore, Chicago, Boston, Detroit, Houston, and Washington, D. C. From 1953 to 1963, the average power usage by consumers on REA-financed lines rose from 201 kilowatt hours to 425 kilowatt hours per month, and is still rising.

Steel

Each year, farmers purchase machinery and other products containing more than 5 million tons of steel or over 7 percent of total U. S. steel production -- enough to make almost 5 million compact cars. It has been estimated that farm use of steel products is responsible for almost 40,000 jobs in the steel industry, almost \$200 million worth of payroll.

Rubber

Farmers use products containing 320 million pounds of rubber yearly -- about 9 percent of the total used in the United States, or enough to put tires on nearly 6 million automobiles.

Machines and Engines

The farm provides a continuing market for engines, electric motors, and the machines they power.

Farmers invested \$3.2 billion in motor vehicles and farm machinery during 1963, a third of a billion more than in 1962. Tractor purchases were \$813 million, \$146 million more than in 1962, and the highest for any year. Farmers increased buying of other farm machinery \$109 million, and spent \$55 million more for automobiles and motor trucks.

The value of equipment on farms increased to a record high of \$19.3 billion on January 1, 1963, and increased \$716 million during the year.

In 1959 farms had 4.8 million tractors, 1 million combines, and 795,000 corn-pickers. While there were 600,000 fewer farms by 1964, the number of some machines climbed: Pickup balers, from 680,000 to 775,000; field forage harvesters, from 290,000 to 345,000; and trucks from 2.8 million to 2.9 million.

The average horsepower of farm tractors produced in 1963 was 58, or more than double the 1940 average, and 8 percent above 1962.

Half of the new farm tractors were of the higher priced diesel type. Farmers still buy primarily to replace old machines. Numbers of tractors, combines, and cornpickers appear to have reached a peak.

Farmers are still eager to increase efficiency through greater mechanization. Large numbers of field forage harvesters, field balers, bulk milk tanks, pipeline milkers, and a variety of other equipment are still needed.

TECHNOLOGY IS EXPENSIVE

Farmers are important customers of business and industry.

They spend about \$29 billion a year for equipment, goods, and services to produce crops and livestock. They probably spend another \$12 billion a year for family living items.

Some average annual purchases by farmers include:

\$2.2 billion for new farm tractors and other motor vehicles, machinery and equipment.

\$3.5 billion for fuel, lubricants, and maintenance of machinery and motor vehicles -- including more petroleum than any other single industry uses.

\$1.6 billion for fertilizer and lime.

Income and Spending

Gross farm income (including nonmoney income and Government payments) was around \$42 billion in 1963, compared with about \$37 billion in 1952, nearly \$19 billion in 1942 and less than \$7 billion in 1932.

Net income, as a percentage of gross income, has almost steadily declined since the end of World War II: Net was 30 percent of gross income in 1963, 39 percent in 1952, and 47 percent in 1942.

Average gross per farm rose from \$7,200 in 1955 to about \$11,700 in 1963. Net income rose from \$2,500 to \$3,500. Average annual wage per employed factory worker rose from \$3,900 in 1955 to about \$5,200 in 1963.

Farmers had about \$6.8 billion of personal income from nonfarm sources in 1963 (such as wages, dividends, social security payments) compared with \$6.6 billion in 1952 and \$3.8 billion in 1942.

From 1954 to 1963 spending per farm doubled for feed, increased 47 percent for hired labor, and 50 percent for gasoline and other oil products for the farm business. Total farm operating expenses reached a record high of \$29.2 billion in 1963, almost \$8,200 per farm.

Here is an estimate of what farmers spent for some of the more important farm production items in 1961 and 1963:

<u>Items</u>	<u>Million Dollars</u>	
	<u>1961</u>	<u>1963</u>
Autos (production use only)	322	510
Trucks	480	479
Tractors	602	813
Other farm machinery	1,236	1,368
Dwellings	735	785
Service buildings	837	894
Repairs and operation	3,823	4,011
Dwellings and service buildings	(608)	(649)
Motor vehicles and farm machinery	(1,669)	(1,833)
Petroleum, fuel, and oil	(1,546)	(1,529)
Hired labor	3,048	2,965
Pesticides	310	436
Seed	521	564
Containers	141	137
Electricity (production use only)	157	164
Telephones (production use only)	141	149
Binding materials (such as twine and wire)	67	66
Miscellaneous hardware	162	167
Feed	5,000	5,930
Livestock	2,700	2,907

Today's average farmer uses 72 percent of his gross farm income for the goods, materials, and services for farm production compared with 60 percent in the early fifties.

Fewer Farmers, More Spending

Even though there are fewer farmers each year, total production expenses continue to climb: \$6.7 billion in 1940, \$19 billion in 1950, and \$29 billion in 1963. Number of farms decreased from 6.4 million in 1940 to 5.6 million in 1950, to 3.6 million in 1963. While numbers of farmers and farm workers continue to decrease, total buying of all farmers, as well as buying per farm, will probably continue to rise.

Variations In Production Spending

In 1963, the average farmer spent about \$8,200 for production expenses. In 1955, he spent \$4,700 -- \$1,800 if he farmed in the South Central States and \$10,400 if he farmed in the Pacific States.

In 1963 wage costs ranged from about \$340 in the East South Central States to \$3,300 in the Pacific States. Livestock costs ranged from \$180 in the East South Central States to more than \$2,500 in the Mountain States. Feed costs ranged from \$700 in the East South Central States to more than \$4,000 in the Pacific States. Seed expenditures ranged from about \$70 in the East South Central States to more than \$200 in the Northeast States.

Operating expenses for maintaining farm buildings and equipment accounted for only \$550 in the East South Central States, compared with \$1,800 in the Mountain States.

In 1963 average production expenses per farm were: Wages \$830; livestock, \$815; feed, \$1,660; seed, \$160; fertilizer and lime, \$490; vehicle and machinery operating expense, \$1,120; rent, taxes and interest, \$1,050; purchase of vehicles, machinery and equipment, \$890; farm buildings, \$470; and miscellaneous expenses, \$700.

MORE CAPITAL INVESTMENTS

Barns and Buildings

Farmers spent \$1.7 billion for buildings and fencing in 1963. Changes in farming methods and the trend toward specialized farm production make many existing buildings obsolete and inefficient.

New kinds of structures often help reduce production costs. They save labor and make livestock feeding more efficient. Savings in preserving stored crops or in producing livestock, milk, or eggs can offset costs of construction.

The value of farm service buildings construction has been about one-tenth the value of all other private nonresidential construction in recent years. Farmers built service buildings worth \$894 million in 1963, slightly more than the

average of the past decade. Farmers spent \$785 million for the construction of dwellings in 1963. All other private nonresidential construction had a value of \$16.7 billion in 1963. The value of farm buildings in relation to the value of land and buildings together has declined from 30 to about 21 percent in 20 years.

Fencing

Farmers use 142,000 tons of barbed wire fencing a year, 90 percent of total U. S. use. They also use 135,000 tons of woven wire fence, 85 percent of total domestic use. If all the barbed wire farmers used in one year was strung together to make a 3-strand fence, it would extend more than 300,000 miles, or 12 times around the earth.

Fertilizer and Lime

The use of primary plant nutrients -- nitrogen, phosphate and potash -- has increased more than 300 percent since 1940. More concentrated, better fertilizers at relatively stable prices are responsible.

Fertilizer represents one-tenth of all crop production expenditures. It has been estimated that about one-fifth of the volume of all crop production may be attributed to fertilizer and that at current levels of use, fertilizer used on corn returns about \$2.75 per dollar of its cost. If residual effects are taken into account the returns are probably higher.

Recent studies of fertilizer use show that, at present prices, farmers commonly use less than the most profitable rate of fertilization.

In the year ending June 30, 1963, 9.5 million tons of primary plant nutrients (in the form of commercial fertilizers) were used by American farmers, an 11 percent increase over the preceding year. Nitrogen (3,904,000 tons) increased 16 percent, phosphates (3,092,000 tons available P_2O_5) increased 10 percent, and potash (2,536,000 tons) increased 12 percent.

In 1963, about 62 percent of these nutrients were used as mixed nutrients; the balance was used as direct-application materials containing a single nutrient (principally for top-dressing).

In 1945, however, about 72 percent of the total nutrients were applied to crops as mixtures. That same year about 44 percent of the nitrogen was applied by direct application while in 1963 the proportion had risen to 68 percent.

In 1963, U. S. farmers spent \$1.6 billion for commercial fertilizers compared with only \$256 million in 1940. The index of the cost per ton of plant nutrients (1957-59 = 100) was 79 in 1940, 117 in 1950, and 92 in 1963. In more recent years (at much higher general price levels) increases in plant nutrient content, developments in fertilizer technology and the competitive

situation in the fertilizer industry, particularly with respect to nitrogen, have resulted in reduced costs per ton of plant nutrients. Commercial fertilizers contained 20 percent nutrients in 1940 and 35 percent in 1963.

According to the 1959 Census of Agriculture, 42 percent of the harvested cropland was fertilized, compared with 37 percent in 1954. Future requirements for fertilizer will develop with increased population growth and education of the farmer in better use of fertilizer products.

Besides the three principal fertilizers, secondary nutrients -- calcium, magnesium, and sulfur -- are now added to the soil in large quantities. These chemicals aid release of plant nutrients that may otherwise be "tied-up" in forms unavailable to growing plants, and compensate for soil deficiencies in some areas.

Trace elements, including boron, copper, manganese, and zinc, are being added to some soils with good results. Deficiencies of these micronutrients are remedied by applying them to the soil directly, or including them in foliage sprays or mixed fertilizers.

Bulk handling of solid and liquid fertilizers has helped the farmer by eliminating the lifting of heavy bags. Use of liquid fertilizers was practically nil in 1940; in 1963 about 19 percent of total nutrients were applied in liquid form. The trend to larger farms, mechanization, and encouragement to apply nutrients (shown needed by soil tests) has created a new service to farmers -- custom service of bulk applicators.

New methods and machines offer major savings in labor requirements, but rising machine prices have slowed the sales of modern equipment to handle concentrated fertilizers. As a result, custom operators service farmers in some areas, and farmer's cooperatives have begun to offer custom services to their members.

Agriculture is expected to use even more fertilizer in the future. Only 11 percent of U. S. farmers used recommended rates in 1959, and 37 percent used none on their cash crops.

CROP AND LIVESTOCK PROTECTION

Chemical Feed Supplements

The U. S. market for animal health and nutrition products is \$250 million. About \$110 million go into improving the efficiency of feed conversion. Antibiotics have the largest share (30%) of the market with vitamins in second place. Nearly 60 percent of the volume of synthetic bulk vitamin A goes into animal feeds. Other classes of feed supplements used in significant quantities include coccidiostats, urea, mineral mixes and amino acids.

Spraying and Dusting

Crop and livestock pests always plague agriculture. These destroyers of food and fiber include not only insects and some animals, but fungi and viruses, and especially weeds.

A century ago, when effective controls were generally unknown, pests were treated with materials such as lime, soot, ashes, elder leaves, plaster, charcoal, and organic dust. Crude and ineffective as these may seem, they were an indication that man had moved away from the idea that visitations of pests were supernatural acts from which there was no escape.

U. S. production and sales of agricultural pesticides continues to grow. More of these chemicals are synthetics than ever before. U. S. production of synthetic organic pesticides alone grew from 570 million pounds in 1956 (valued at \$275 million) to almost 772 million pounds in 1963 (valued at almost \$458 million). About 60 percent of this production goes into U. S. agriculture.

In 1959-60, farmers bought about a fifth of their pesticide needs -- \$53 million -- through cooperatives.

The extent of control and preventive work against the costly attack of insects, micro-organisms, and weeds is emphasized in many statistics. For example, U. S. shipments of all pesticides, including formulated materials, in 1958 totaled \$529 million, of which only \$86 million was "household" type preparations. The total for 1962 was \$734 million, including \$115 million of household type.

Materials for Industry

Farming a contributor to industry

Agriculture has historically been a producer of food and fiber, but the number of industrial products manufactured from farm products continues to increase each year. Clothing, paint, drugs, chemicals, construction, materials, paper, soaps and detergents, solvents, plastics, packaging films, and many other everyday products are made from the abundance of our farms and forests.

In 1963, we used 4.2 billion pounds of cotton, enough for 30 dress shirts or 21 house dresses for every man, woman, and child in the Nation.

We used over 561 million pounds of clothing and carpet wool, more than 2 pounds per person.

We used 450 pounds of paper per person in 1963, the annual growth from about 3/4 of an acre.

Three out of four mattresses we sleep on are stuffed with cotton lint, the "waste" cotton fibers.

But, while dollar volume of farm goods for industrial use continues to increase, its relative importance in total farm output has decreased.

Competition between natural and synthetic products

Farm production for industrial purposes has dropped to about seven percent of our cultivated acreage in recent years. This includes cotton, tobacco, wool, cornstarch, and rosin, as well as soybean, linseed, safflower, and other oil-seed crops. Woodlands and forests also supply tremendous amounts of materials for industry each year.

Some farm commodities are being used in increasing quantities, but per capita nonfood use of farm products has declined. Research has helped the petroleum and chemical industries to offer competitive new products -- for example, synthetic fibers (replacing cotton and wool), petroleum-derived detergents (replacing fat-based soap), and synthetic water-base paints (replacing vegetable oil products).

Expanded industrial outlets for farm products can help narrow the gap between agriculture's ability to produce and the economy's capacity to consume. For example, the incorporation of only 2 to 5 percent starch in the 30 million tons of pulp and paper products used in the United States today would provide an outlet for 40 to 100 million bushels of grain.

Table 1. -- Estimated Value of Agricultural Products Used by Industry, 1962
(million dollars)*

Product	Value	Product	Value
<u>Used exclusively by industry</u>		<u>Oil crops</u>	
Cotton (fiber)	2,303	Soybeans	788
Tobacco	1,316	Cottonseed	151
Wool	116	Peanuts	20
Flaxseed	80		<u>958</u>
Mohair	18	<u>Food grain</u>	
	<u>3,835</u>	<u>industrial use</u>	
<u>Feed crops</u>		Wheat	362
Corn	1,692	Rye	25
Sorghum grain	433	Rice	12
Hay	364		<u>399</u>
Barley	254	<u>Animal by-products</u>	23
Oats	172	<u>Other</u>	
	<u>2,915</u>	Broomcorn	9
<u>Miscellaneous</u>		Tung oil	4
Greenhouse and nursery	707		<u>36</u>
Forest products	237	Total of these	
Seed crops	134	estimates	9,221
	<u>1,079</u>	Total farm marketings	35,921
		Percent farm production	
* Rounded estimates only		used by industry	26

RESEARCH OPENS NEW USES FOR FARM-GROWN MATERIALS

Just as the petroleum industry recognized the need for upgrading its raw materials to increase demand and profits, so the farmer is becoming aware that he must find industrial outlets for his products to increase his income and reduce surplus production.

Prospects for a comeback, in areas where farm commodities once were dominant, have brightened in recent years. Increased research, to improve agricultural products, is opening new fields. Since 1958, improvements in the properties of cotton and wool, along with other factors, have reversed the downtrend in use of natural fibers. When easy-care cottons and washable woollens become available, they reclaimed some of the gains achieved by man-made fibers.

But agriculture has lost many markets by default. Until about 1930 the only fibers used in textiles were natural materials -- cotton, wool, flax, hemp, and silk. Soap was made from agriculture-derived fats and oils. Adhesives were made from starch and animal glue. Shoes and suitcases were made almost wholly from leather. Paints were made from vegetable oils; alcohol, from molasses and corn.

The chemical and petroleum industries, through research, quickly developed new products from coal and petroleum. Synthetic fibers currently account for 36 percent of total fiber consumption; synthetic detergents now account for 77 percent of all soaps and detergents. Within the past 10 years, the use of inedible tallow and grease for soapmaking decreased from 42 percent to 20 percent of the annual supply of these fats. Between 1950 and 1955, the market for cattle hide leathers changed from one of scarcity to surplus.

Until about 20 years ago research in the industrial use of farm products received little emphasis. Now, with increasing farm product research, especially by the USDA research laboratories, new industrial uses for farm products have been developed; the trend of replacement of agriculture-derived products by petroleum and coal tar products has been decreased.

Many future prospects possible - new species

Of some quarter-million known species of higher plants, only about 150 are grown in the United States. No comprehensive scientific effort has been made to determine the chemical, medical, and industrial values of plant species growing in the earth's wild areas. Most plant exploration has been directed toward the search for strains offering improvements in existing crops.

Possibilities for using exotic or uncultivated plants in American agriculture and industry are little known. Most of the economically important plants now cultivated were chosen by early primitive farmers. Now, modern methods of analysis and agricultural practices are being used to develop new crops. By 1964, the Northern Regional Research Laboratory alone had screened or examined some 4,000 samples of new oilseed bearing plants.

Soybeans -- a success story

Soybeans are an outstanding example of success in introducing new species to the United States. Introduced from the Orient, soybeans were grown on only a million acres in 1930. Scientists successfully exploited the soybean's versatility for industrial use, as well as for food and feed. In 30 years, its usage has grown so that it accounts for 75 percent of the vegetable oils used in the manufacture of shortening, 85 percent of the vegetable oils used for making margarine, and 50 percent of our high-protein livestock and poultry feed.

In 1962, 675 million bushels of soybeans were harvested from 27.9 million acres and brought farmers about \$1.6 billion gross income. Besides satisfying many food, feed, and industrial needs, soybeans are a major export commodity. (U.S. output is more than double that of the next largest producer, mainland China.)

Research--3 percent for chemical industry
1 percent for Agriculture

The chemical process industries as a whole now spend about 3 percent of their total sales income on research and development. Agriculture, despite a great need for utilization research,* probably spends less than 1 percent of total agricultural sales for research.

The Department of Agriculture spent \$33 million for utilization research and development in 1964. These funds were used for food, feed, and industrial-crop research, with emphasis on expanding the use of surplus crops, vegetable oils, and animal fats.

Research pays off

A study of the Department's utilization research costs has shown that in recent years \$25 worth of benefits has been realized from every \$1 spent for research. Among the many results of utilization research are:

- soybean meal as a major contribution to the modern livestock and poultry feed
- special finishes for wash-wear cotton fabrics
- all-cotton stretch fabrics
- washable woolens that are shrink-proof
- a process for producing frozen concentrated citrus juices
- dehydrofreezing as a processing method that cuts storage and transportation costs
- improved handling and storage of frozen fruits and vegetables
- fruit powders
- high moisture prunes and figs
- dehydrated potatoes
- improved flavor and stability of soybean oil, which has led to considerably expanded use of the oil for food
- wheat wafers for fallout shelters
- epoxy plasticizers, from seed oils and fats
- use of stearic acid as a lubricant in rubber manufacture
- use of tallow for tinning and cold rolling of steel
- use of fats in animal feed
- an improved fermentation process for producing penicillin
- dextran, a blood plasma extender
- dialdehyde starch, useful in making wet-strength paper, in tanning leather, in pharmaceuticals, and as a chemical intermediate

*Utilization research is the study of the physical, chemical and nutritional properties, and the modification of the products of agriculture--for developing new, improved products for food, feed, and industrial uses.

New crop studies

The Department of Agriculture each year analyzes some 700 varieties of seed for oil content, protein value, and industrial value.

Some crops with potential commercial use are: sesame, for many food, feed, and industrial uses; Jojoba Simmondsia, for oil and wax manufacture; Dioscoria, for cortisone production and other drugs and chemicals; guar, for use in the paper industry and for the stabilization of drilling muds; canaigre, for the tanning industry; kenaf, for cordage fiber and as raw material in the paper industry; ironweed, for use in plastics and paints; and crambe, for its erucic-acid oil as a raw material in making rubber, fibers, detergents, lubricants, and other industrial products.

The castor bean

The castor bean is a good example of how research could increase the use of farm products and create new jobs and markets for industry. Castor beans yield an oil with unique and valuable properties now used in paints, varnish, fungicides, and cosmetics. The oil is converted into sebacic acid and capryl alcohol used in the manufacture of plasticizers, coating materials, resins, and lubricants for high-speed engines. However, the allergenic substances present in castor seed pomace present the major obstacle to the use of castor as an animal feed and thus its reaching the status of a major crop.

SOME INDUSTRIAL USES

A list of all the ways in which farm products are used in industry would be infinite. Just one intermediate product, starch, finds its way into a myriad of products. These include: Adhesives, dry cell batteries, boiler compounds, fuel briquettes, ceramics, chemicals, cigarettes, cork products, cosmetics, dyes, explosives, castings, insecticides, insulation, laundry blueing, linoleum, lumber treatment, mining, paints, paper, plastics, plywood, printing ink, rayon, road paving, rubber, silvering compounds, soap, textiles, and window shades.

For starch

Cornstarch's largest use is as a size to make paper strong and tough and in the machine coating of paper. The paper industry uses about a billion pounds of starch in the manufacture of paper and paperboard. Next largest use is in the textile industry. Approximately 300 million pounds of cornstarch are used annually in warp sizes for cotton and textile fibers.

Pregelatinized starch is used as a core binder in foundry molds. Raw and processed starches are used in the mineral industries in the ore flotation process. Starch is an essential ingredient of many oil-well drilling muds.

Starch pastes are used as binders in many types of building materials. As a diluent and filler, starch is used in cosmetics, insect powders, and soap or cleaners. It is the basis for a variety of adhesives and binders and is even found in such products as charcoal briquettes and dynamite.

Nearly 200 million pounds of dextrin are produced from starch for use as an adhesive.

For corn

Although the other products of corn refining are mostly consumed in food uses, they have industrial applications too.

Corn sirup is used in glassine paper, rayon making, and pharmaceuticals. Corn sugar finds applications in the tanning and rayon industries. Lactic acid, a fermentation product from corn sugar, is used mostly for food products, but it is also used in leather tanning, textile printing, and the manufacture of synthetic resins. Small amounts of corn oil are used in soap and insecticide manufacturing. Even the steepwater from corn refining has become important in the pharmaceutical industry as a culture medium for penicillin production, among other processes.

Fats and oils

We usually think of fats and oils as food. Few of us are aware that 782 million pounds of fats and oils were used in soap manufacture in 1963, 841 million pounds in drying-oil products, 570 million pounds in paint and varnish, 93 million pounds in floor coverings and oilcloth, 97 million pounds in lubricants and greases, and 2.9 billion pounds in other inedible industrial products.

Polyvinyl chloride, a plastic used for furniture covering, flooring material, and raincoats, must be softened with a plasticizer for most of its uses. Agriculture supplied 45 million pounds of oils that went into plastics (principally polyvinyl chloride) in 1960 for use as a plasticizer.

Industrial use of fats and oils has increased from 2,618 pounds (1925-29) average to a record high of 4,553 million pounds in 1963, but their proportional use by industry is decreasing:

Fats and Oils Used in Nonfood Products

	<u>Soap</u> <u>Percent of Total</u>	<u>Drying Oil</u> <u>Percent of Total</u>	<u>Other Industrial</u> <u>Percent of Total</u>
1925-29	59	33	8
1930-34	64	24	12
1935-39	57	27	16
1942	55	27	18
1952	38	28	34
1962	17	20	63

THE FEED INDUSTRY, \$5 BILLION

In 1962, farmers bought \$5.5 billion worth of feed for livestock, 20 percent of their total farm production expenses. Farmers themselves grow much of the raw materials used in feed. But, the feed industry can be considered another industrial market for farmers' production.

The commercial feed industry sold about 46 million tons of feed ration in 1962, compared with about 10 million 30 years ago. It employs almost 60,000 workers, three times more than 25 years ago. Total payroll increased from \$24 million a year to \$250 million a year in the same 25-year period. Heavy machinery, which has become much more important in recent years, has brought about a tendency to concentrate the industry in fewer establishments. Still, about 2,400 commercial firms were reported in 1958.

In 1963, farmers purchased \$564 million worth of seed. American farmers grew most of this seed, but a large part of it moved through commercial processing plants and channels to other farmers.

Jobs and Workers

Farm work differs from industrial work, but the difference is not technological backwardness. Most farm workers today use more power and complex machines than do factory employees. However, there are three basic differences:

First, in farm work, man deals with nature - the hours of labor and the sequence of operations are dictated by weather and by the life cycles of plants and animals.

Second, Most farm work is done by farmers and their families, not hired workers.

Finally, there is the matter of pay. The average farm worker earns far less for his work than does the average industrial production worker -- \$1.05 an hour compared with \$2.46 in 1963.

FARM EMPLOYMENT DOWN

Farm employment dropped to 6.5 million in 1963: 4.7 million farm family workers, and 1.8 million hired workers.

About 5.5 million workers receive most of their income from farmwork. The others of the 6.5 million receive most of their income elsewhere. A still better measure of reduced farm employment is man-hours of labor used for farmwork. Almost 8.8 billion man-hours were used in 1963, about half of the total man-hours used just after World War II.

In 1890 the number of industrial workers equaled the number of farm workers in the United States. By 1910, only 3 American workers in 10 were on the farm. Each worker supplied 7 people. Our farmers were among the most productive in the world, and the United States had become the world's leading agricultural producer.

But progress had just begun. Better plants (through genetics) and scientific farming principles received great attention. The gasoline engine substituted machines for muscles.

During recent years, agricultural technology has grown faster than industrial technology. From 1950 to 1960, gain in output per farm worker more than doubled the gain in manufacturing; 5.4 percent a year compared with 2.4 percent. By 1963 each of our farm workers supplied farm products to 31 consumers.

WORKER EFFICIENCY GAINS

Four million fewer farm workers produced over 50 percent more in 1960 than in 1940. Some other significant changes realized during the 20 years before 1961-63:

Corn -- 92 percent more corn per acre--produced with 72 percent fewer man-hours per acre; 86 percent less work per bushel.

Wheat -- 47 percent more wheat per acre, and 61 percent fewer man-hours per acre; 73 percent less work per bushel.

Cotton -- 79 percent more cotton per acre, and 52 percent fewer man-hours per acre; 73 percent less work per bale.

Milk Cows -- 57 percent more milk per cow, and 33 percent less labor per cow; 58 percent less work per gallon.

Broilers -- 88 percent less labor per pound.

Sweeping changes in the number and kind of farm workers have occurred as their efficiency rocketed up. The great reduction in farm workers has been partly offset by more jobs in industries and other businesses servicing farms. The additional jobs have prevented greater rural unemployment.

The cost-price squeeze -- lower prices for farm products coupled with higher prices for labor and production tools -- meant that farmers had to adopt more efficient farming methods and machines. The new methods and machines increased labor productivity even faster.

The average farm used less than a half year's work by hired labor in 1959, the same as 20 years earlier, when there were almost 3 million more farms. Farm employment declined by 4 million workers as acreage per farm increased from 174 to 302. Half of our 3.7 million farms reported hiring no labor in 1959.

As farm output per man-hour more than tripled in 20 years, the family farm, with the operator and his family providing most of the labor and management, continued -- actually made gains -- as the major production unit in agriculture. Total farm production from family farms was 70 percent of all production in 1959, compared with 68 percent in 1949.

CUSTOM WORKERS

Hired custom service expanded during this period. Farmers were thus able to use specialized, expensive workers and equipment for spraying, dusting, and fertilizing crops, for mixing livestock and poultry feed, and for other specialized jobs.

The widespread use of custom is apparent.

-- About 5,000 aircraft are now employed for applying chemicals and seeds on farms and ranches. About 35 percent of all commercial flying in the U.S. is agricultural.

-- Some 50,000 custom workers take part in the annual wheat harvest.

-- Volume of feed grains commercially processed into animal rations has more than tripled since 1939.

Custom work is ordinarily considered self-employment rather than farm wage work. Statistics are spotty, but a recent survey provided the first study of custom work as distinguished from farm wage work. Nine-tenths of the 386,000 persons engaged in custom work reported having done hired work only in combination with machinery. Those workers who did custom work exclusively for at least 25 days a year averaged \$20 a day in wages (for man and machine); workers employed for less than 25 days during the year earned \$31 a day.

The 5-year Census of Agriculture provides custom work information only in regard to "expenditure for machine hire," which increased from \$114 per farm in 1949 to \$217 in 1959, while the total machine-hire expenditures increased from about \$600 million to about \$800 million.

HIRED FARM WORKERS

Although there were 1.8 million hired farm workers in 1963, only 390,000, nearly all males, were employed 250 days or more. These were generally skilled and experienced. Imported seasonal workers offer them little competition. The year-round male workers' earnings have doubled since the late 1940's, while earnings of all male hired workers have risen about 40 percent. Higher living costs have erased about 30 percent of these increases. Female hired workers, one-fourth of the total work force, had no increase in real earnings.

Hired farm workers in 1962 averaged \$8.05 earnings per day if they worked mainly with machines, and \$6.45 per day if they did mainly hand labor.

Turnover rate among male workers is high, about 20 percent each year. About 18 percent of all male workers in 1959 had 20 years' or more of experience.

While 1.9 million farms hired some labor in 1959, most farm wage workers were employed on specialized farms producing vegetables, fruit, cotton, or sugar. There were 205,000 farm operators who employed migratory workers; about 74,000 operators hired migratory workers exclusively.

The average cash wage bill for the 1.9 million farms hiring workers in 1959 was about \$1,300 per farm, but about 2.5 percent of all farm employers paid \$10,000 or more in cash wages that year.

Recent rises in farm productivity have been made with the use of less total labor, but this work has been spread over a hired working force of about the same size. (See Education, page 8.)

In 1959, for example, all hired farm workers worked the equivalent of only 1.2 million job-years. But about 4 million people were employed for farm work at some time during the year.

Many hired workers are severely handicapped in the labor market by lack of skills, education, and training. Unless the Nation's general economic health is very good, their opportunities for better paying work are limited.

Over half of all men whose longest job in 1961 was farm wage worker had grown up in families in which the father was a farm operator or a farm laborer. Most of the farm wage workers had begun their working careers in a farm job.

About 6 out of 10 persons hired to work on U.S. farms in 1960 had completed less than 8 grades of school; only about 1 in 7 had completed high school. Male heads of households who had completed at least 1 year of high school earned twice as much a day at farm work as those who had completed only 4 years of school. The better educated workers also had steadier employment, earned higher annual wages, and more often worked at nonfarm jobs than did those with little education.

In the South, hired farm workers had completed an average of 7 years of school compared with an average of almost 9 years completed by workers outside the South. Average educational level of farm laborers has not improved over the past 20 years.

STANDARDS OF EFFICIENCY

American farm efficiency enables 93 percent of our workers to choose nonfarm occupations with relative freedom. This fact is better appreciated in countries where farmers' inefficiency hampers industrial development. Accustomed to viewing the assembly line as the active symbol of productivity, many city people do not comprehend what their farming neighbors are doing.

The facts of nature and plant life preclude a farm with hundreds of workers reporting daily to carry on activities comparable with the factory assembly line.

Farms that do approach this factory concept have been developed, however, in the mild climates of California, Florida, Arizona, and Southern Texas. These States are major centers of hired farm workers.

Efficient farm production requires attention to weather and soil conditions and decisions on timing operations -- and generally these cannot be directed satisfactorily from a swivel chair.

Machines, however, have brought great increases in the area of land a man can handle. A man with a good team of horses would plow about 2 acres a day. Mechanical power makes it possible for him to plow 10 to 100 times that much. Power has also been applied to other farm work with similar increases in efficiency. Savings in cost per unit of output are generally achieved within the limits of family-size farms. Only negligible additional savings may be obtained with larger-than-family-size farms.

There are significant economies in farm size-up to the point where a full line of equipment can be used. This point is well within the size limits of family farms. Beyond it, there is little additional economy in size. Expanding farms beyond family size merely multiplies the same units already used on well-organized family farms.

PROBLEMS EFFICIENCY CREATES

Increasing productivity per worker has eliminated many jobs in farming. Uprooted by technological progress, many find it difficult to get other employment. The trend continues toward fewer farms, fewer farmers, and fewer hired workers. A principal reason: Only one-fourth of American farms can obtain necessary capital and resources -- primarily machines and land -- for efficient production. About 1.6 million family farms lack the resources needed to earn \$2,500 a year, the minimum for a reasonable standard of living.

The great increase in farming expenses and farm land prices, with continuing low farm wages, make it increasingly difficult for farm workers and tenants to buy an adequate size farm.

LADDER CONCEPT NO LONGER VALID

The traditional concept of the "agricultural ladder", by which a farm youth climbs to own and operate a farm has included most of these steps: (1) Farming experience on his parents' farm; (2) Working on a neighbor's farm to get more experience and enough capital to be a tenant; (3) Operating a rented farm to earn a downpayment on a farm; (4) Buying a mortgaged farm; and (5) Eventually paying off the mortgage.

In 1880, the Census revealed 1 in 4 farm operators was a tenant. The proportion of tenants and sharecropper farmers increased until 1935. The proportion of farm laborers increased until 1940. Since 1935-40, the proportion of tenant farms has dropped to 1 in 5, that of sharecropper farms to 1 in 30.

Seventy-nine percent of farm operators owned part or all of their farms in 1959, compared with 57 percent in 1930, and the recorded peak of 74 percent in 1880. Better farm credit helped many farmers improve their status. In 1959, however, there were 800,000 farm operators renting land, in addition to that they owned. The need for larger acreage, to make efficient use of expensive farm machinery, creates a strong demand for farmland. Added cropland speeded the decline in numbers of farm workers and farms, by making possible more use of larger, expensive equipment.

As farm job opportunities decline, a farm labor surplus is created. As the number of farms decline, and capital requirements increase, the traditional agriculture "ladder" is displaced. Keen competition for available lands, low wages, and low net profits make farm ownership extremely difficult for the young farm worker.

Inheritance and family help are alternatives to the traditional self-help ladder. Neither will usually permit all the children of farm parents -- owners, tenants, croppers, or hired laborers -- to achieve farm ownership. About 80 percent of the farm-reared youth must find jobs outside commercial farming. But there are opportunities for youth in agriculture that are not being fully realized.

CHAPTER IV

MARKETING AND CONSUMER PROTECTION

From Farmer to Consumer

One important reason for the striking increases in output per farm worker is that many jobs once done on the farm have moved to the city. This is true especially of farm power and marketing.

In a sense, marketing is a continuation of the production job that starts on the farm. To be useful to the consumer, a product must be in the right form, at the right place, at the right time. That's the job of processing, packaging, handling and storing, transporting, and selling--all the jobs that add up to agricultural marketing.

Our marketing system influences farm production in many ways. Because of marketing, we grow many of our products in specialized areas where they can be grown most efficiently--perhaps hundreds or thousands of miles from market. It lets us, wherever we are, enjoy foods no matter where they are best grown.

What did it take to create such a marvelous nationwide system for using our abundance?

It took market information...information on production, on supplies actually reaching various markets and prices in those markets, on demand now and expected later...fast-moving information for perishable products.

It took development and use of a common language--standards of identity, standards of quantity, standards of quality.

It took rules of fair play and an impartial umpire to see that they were carried out.

Later it took a variety of Government actions to help attain orderly marketing, at least moderately fair returns to producers, care of our resources, and constructive use of our abundance.

And, finally, it took a scientific approach to the problems of marketing, transportation, and distribution of agricultural products similar to the scientific methods which have been utilized so successfully...in connection with the production of agricultural products, so that such products capable of being produced in abundance might be marketed in an orderly manner and efficiently distributed.

Congress in 1946, declared its intent to provide for (1) continuous research to improve the handling, storage, processing, and transportation of agricultural products; (2) cooperation among Federal and State agencies, producers, industry organizations, and others in the development and use of research and marketing programs to improve distribution; (3) an integrated administration of all laws enacted by Congress to aid the distribution of agricultural products through research, services, and regulatory activities.

WHAT MARKETING IS

Marketing begins on the farm and ends with the consumer or final user.

Between farmer and consumer, there are weekly paychecks for 10 million people--the men and women who transport, process, finance, stock, sell, and deliver the foods, the fibers, and the industrial products created from farm materials.

The roads to market are many and varied. Three quarters of farm production is needed to feed 192 million Americans. The balance is for industrial and export use.

The marketing process raises value of farm goods about three times the farm price. Farm goods account for less than 10 percent of our gross national product, at the farm. After they leave the farmers' hands, food, fiber, and tobacco are multiplied in value as they go through plants and markets and along countless roads and waterways--to become the food and clothing, chemicals, tobacco and beverages, homes and furniture that raise our living standard and advance national goals.

In their final forms, the inexpensive and plentiful products of the fields, pastures, range, and woodlands account for 40 percent of the Nation's total economic activity.

It would be simple to market the products of a single farm if the customer were only a single family. Of course, these two hypothetical families, the farmer's and his neighbor's, would be accustomed to a rude diet, an occasional hungry year, and to spending most of their time in raising and preparing the bare necessities of life. Pioneer Americans knew such conditions. Most of the world's peoples know little better even today.

Modern America, however, is accustomed to fantastic efficiency in farming--a single farm worker among each 31 citizens. We tend to take for granted a system of production and distribution that would have seemed a miracle here in earlier times--and seems so even today in many other lands.

Production without purpose, harvests without markets, would be our lot if the roots of the marketing process did not reach far inside the farm fence. Market information, demands and prices, are a daily, seasonal, and annual concern to the Nation's 3.5 million farmers. Yet, each farmer alone is unable to gear his production power to the market.

To understand how marketing methods have changed to meet conditions, some historical perspective is helpful.

Not until about 1900 did American farmers begin to appreciate fully the value of marketing. Before that year, farmers knew little about the sales end of their business. They grew the crops; selling took care of itself in the "natural course of things."

Returns through "the natural course of things" had become, too often, a source of concern and dissatisfaction for the farmer. At the other end of the process, consumers, too, were concerned and dissatisfied with quality, supply, and price.

This common interest brought Congressional authorization in 1913 for an Office of Markets, to provide farmers with research and educational help on their cooperative and marketing problems. By 1915, daily reports on the movements and prices of perishable products were begun. Farmers and distributors liked the service, found it helpful, and urged its extension to other products. As market information became more generally available, farm supplies began to flow with greater regularity to meet demands. National market information and improved transportation opened new outlets for highly productive farming areas. Consumers and farming communities benefited. Accurate and unbiased information facilitated prompt, wide-spread, and more efficient distribution of farm goods.

It did not, however, solve the problem of gearing production to demands. Something of the depth and the serious character of this problem is apparent in the 1920 Report of the Secretary of Agriculture.

Secretary E.T. Meredith informed the President:

"The farmers of America have again justified the faith of the Nation in their ability to meet its requirements of food, feed, and raw materials for clothing. They have produced this year...the largest harvest in the history of American agriculture, with a single exception...."

"The year's (crop) output, produced at an abnormally high cost, is worth, at current prices, \$3 billion less than the smaller crop of 1919...the total value of animal products in 1920 is...about \$200 million less than in 1919. There is probably no other industry or business that could suffer a similar experience and avoid insolvency."

Secretary Meredith suggested that ways be found to carry over good crops to the lean years, and that attention be given to marketing and the development of outlets.

He noted that many charges of wheat price manipulation were being investigated. He cited the need for: Marketing research and cost studies, here and abroad; funds to enforce existing authorization to supervise livestock markets; adequate short-time personal credit for farmers; studies for development of better ways to rent and buy farms. He expressed concern for soil depletion.

MARKETING IMPROVEMENTS

Vast improvements have been realized. But markets and conditions continue to change. Farmers, processors, distributors, and consumers change--in what they can do and what they want, in their methods and efficiency, in their likes and dislikes.

Today, farmers' retail markets and roadside stands and the huckster who markets farm produce door to door have a minor place. The farmer usually sells to a local buyer or through a cooperative, seldom to the consumer. He has greater protection in the market place and easier access to distant markets. He still needs to better adjust his production to meet changing demands.

New York, \$25 million saving possible

It has been said that it costs less to move a crate of lettuce from California to the east coast than across the Hudson River to the New York wholesale market. One example of the need for improved city market facilities is the New York City fruit and vegetable market in lower Manhattan. Fourteen million metropolitan New Yorkers spend \$500 million a year for fruit and vegetables, equal to 165,000 carlots. Of this amount, the equivalent of 111,000 carlots move through the congested lower Manhattan area. About \$10 million, or 2 cents per dollar of produce, is unnecessary, caused by a wasteful, inefficient marketing system in the city.

Efficiently produced food arrives in the New York terminal market to find great inefficiency. No train reaches the Washington Street market, the principal wholesaling center. Produce arriving by rail must be transferred to trucks to reach the market.

Big cross country trucks are barred from the market. Produce must be transferred to smaller trucks. Cartage, from point of arrival to the market, adds an estimated \$4 million a year to the city's fruit and vegetable bill.

Trucks wait in line for hours to unload or pick up produce. These delays cost nearly \$3 million a year in time of men and trucks. Loss of quality and outright spoilage caused by delays and excess handling cost nearly \$2 million a year.

Because of the extreme congestion, tons of produce must be carried on men's backs to waiting trucks, parked some distance away. Porterage charges add \$1 million to the city's annual produce bill.

Construction began in late 1962 on a new terminal market for fruits and vegetables. This is expected to reduce marketing costs, improve service and reduce labor requirements. The market is scheduled to open in mid-1965.

Similar conditions exist in meat and poultry marketing. Plans have been completed to buy a site adjacent to the new fruit and vegetable market to build modern facilities for handling these commodities. Potential saving is estimated at \$15 million.

Terminal wholesale markets in many cities are antiquated, congested and inefficient. The problem is complicated because new products are being handled, and the whole marketing structure is very different from what it was only 10 years ago. In Detroit, it is estimated that if a new food distribution center were built at a more suitable location, \$4 million a year would be saved.

Plans have been developed for a new wholesale market in Pittsburgh. It would cost about \$35 million to build and could bring net savings in food handling costs of about \$2 million a year. Plans have been developed also for new wholesale food markets in Boston and Springfield, Mass.; Milwaukee, Wisc.; and San Juan, P.R.

New terminal markets have been built in many cities. Among these are New Haven, Conn.; St. Louis, Mo.; Louisville, Ky.; Columbia, S.C.; and San Francisco, Calif.

MARKETING RESEARCH

Marketing researchers work closely with industry, using the system's packing-sheds and warehouses, its storages, trucks, trailers, ships, and planes, its wholesaling and retailing outlets, as a vast research laboratory. They also maintain laboratories at points of production and at markets, where specific problems can be worked at under controlled conditions. Some of the results of this vast, continuing effort include:

1. Wholesalers of fresh fruits and vegetables can reduce their costs of receiving produce by up to 60 percent--by adopting improved practices. A change from use of two-wheel hand trucks to more efficient methods can cut the costs for labor and equipment from \$1.39 to 54 cents a ton.
2. An air-door has been designed that keeps heat out of cold storage rooms while produce is being moved through open doorways. It cuts down the danger of collision in the doorway, allows free movement of workers and equipment, and acts as an insulating curtain.
3. Shipping lettuce at the "firm" stage of maturity, and trimming it to two wrapper leaves, substantially reduces shipping weight while maintaining quality for the consumer.
4. Use of controlled atmosphere storage, along with polyethylene liners in boxes, has extended marketing life of some varieties of apples from March into July; others, formerly marketed only into January, are now available as late as June. Pears used to be through marketing by March; now half the crop is marketed after March.

5. Development of a new corn drying process--termed dryeration--promises not only to reduce drying damage to shelled corn, but also to increase materially the drying capacity of commercial dryers. The process, combining aeration and heated air drying, permits use of high drying-air temperatures, eliminates cooling in the dryer, and produces corn with minimum damage.
6. The automatic peanut sampler, peanut counter, and seed counter indicate the trend toward, ultimately, the completely objective and automated sampling and grading of farm commodities. Already in commercial use is the tomato colorimeter that tells, regardless of exterior appearance, the interior color of the tomato and so assures the processor a constant color in his final product. So is the automatic egg sorter that rejects eggs with blood spots or certain rots. Undergoing field trials are instruments that "look" inside potatoes and reject those with interior defects, and instruments that determine the maturity and chlorophyll content of an apple, and whether the fruit has watercore.

The Marketing Spread

FOOD TAKES A WALK

Food takes a long walk from field to table, and each step adds to the cost. In fact, of each farm food dollar spent in 1963, 63 cents was for marketing, and 37 cents for the farmer.

There was a time when most food came from farms near town -- when locally produced potatoes, cabbage and turnips were the family's main vegetable diet through the winter months...when many farmers delivered milk and produce to consumers...when the women of the family baked their own bread and cakes...when most food we ate came from the same county, almost entirely from the same State.

Today, our food comes to us via rail, water, highway, and air. Refrigerated railway cars carry fruits, vegetables and other perishables 3,000 miles, delivering them fresh and tasty, year 'round. Glass-lined truck tankers transport milk many hundreds of miles overnight. We eat food produced in 50 States and more than 35 foreign countries.

A supermarket may have 8,000 different food items on its shelves. Convenience foods at the corner grocery, "ready mixes," "instant" potatoes, and milk, "heat and serve" dishes and meals provide built-in maid service for working or rushed homemakers. "Season" is year 'round for practically every food -- the result of the technological explosion in agriculture and in the marketing, processing, storing, transporting, wholesaling, and retailing of food.

Modern food production and marketing gives us a basic foundation for good health, longer life, and taller, healthier children. But supplying this nutritious, wholesome food in adequate amounts for a balanced diet is a big job -- and a big business.

In 1963, domestic farm food products for our civilian population cost \$66 billion. The farm value of these foodstuffs was \$21 billion. The marketing bill totaled \$45 billion.

The story of the food we eat is an involved one. It does not, of course, stop with the purchase and serving of food in homes. Today about one out of every four meals is eaten outside the home. An estimated 50 million people "eat out" every day in commercial restaurants and cafeterias, hospitals, schools, various types of State institutions, military installations, factories, retirement hotels, and homes for the aged.

Foods purchased for commercial and institutional kitchens in 1961 had an estimated \$7.5 billion wholesale value; value when served at retail price was estimated at \$18 billion by the National Restaurant Association.

MARKETING COSTS AND MARKETING SERVICES

Marketing is everything that happens to food and fiber after it is sold by farmers -- the processing and distributing necessary to get products to consumers when, where, and how they want them.

Marketing costs are the payments or charges for these services -- the costs of labor, transportation, containers, supplies, taxes, and profits.

For consumers marketing costs add to the price of food. Shoppers pay, on the average, 63 cents of their farm food dollar for marketing costs. For many farm foods, the cost amounts to 75 or 85 cents.

High marketing costs may squeeze the shopper's food dollar so she has to buy less food -- or, less of the food she really prefers.

For marketing agencies higher wages, higher costs of supplies and equipment, and higher taxes may result in lower profits or perhaps no profits at all.

For farmers higher marketing costs may cut the farm price so deeply that the farmer cannot meet production costs. Unfortunately, production costs usually rise when the costs of marketing climb.

Thus, it seems, no one likes marketing costs -- neither the farmer, the consumer, nor the marketing agency.

Costs pay for services

But let's take another look at the situation. Marketing costs also pay for services that add value to food. When these services are wanted by consumers, and when they can be provided efficiently, consumers will pay the marketing costs.

Some marketing is necessary to get farm products to retail stores, the way the customer wants them. Transportation is the first requirement; processing often is another. Many other services, such as canning, freezing and refrigeration help extend farm markets both geographically and seasonally.

These services cost money. They may add to the retail price. But, they make foods more attractive to consumers and reduce homemaker's time and costs in kitchen preparation. Likewise, higher wages to workers may add to costs, but they also attract more efficient workers. Greater efficiency may offset part or all of the increased wage cost.

More efficient processing and distribution may mean more services and less of a rise in marketing costs. This marketing efficiency is more evident now than ever before. Public and private research can continue this trend toward marketing efficiency.

Why food costs more

Just about everything costs more dollars these days. The yearly retail cost of farm food, for the average urban U.S. family, rose from \$940 in 1947-49 to about \$1,078 in 1963, about 15 percent. But, farm value (per family) of this food dropped from \$466 in 1947-49 to \$394 in 1963, a 15-percent decrease.

The national cost of marketing farm food has more than doubled in 15 years, going from \$22 billion 1947-49 to \$45 billion in 1963. Farm value went from \$18 billion to \$21 billion in this same 15-year period.

In 1939, the total marketing bill of \$8.6 billion was comprised of \$4.2 billion for labor, \$1 billion for transportation, \$0.3 billion for profits, and \$3.1 billion for other expenses.

Of the \$45 billion bill for food marketing in 1963, almost half (\$20 billion) was for labor, \$5 billion for rail and truck transportation, \$2.4 billion for corporation profits, and \$17 billion for other costs (including fuel, electric power, packaging, air and water transport, interest on borrowed capital, taxes, and noncorporate profits).

Prices of containers, packaging, and most other marketing supplies are higher. Freight rates, interest rates, taxes, and other costs are also up.

Transfer of some of the food preparation work from the kitchen to the factory and restaurant has increased our farm food marketing bill by \$8.0 billion since 1940.

Convenience and containers

Gone are the days when the housewife went to the live chicken market to pick out a bird, then take it home for plucking and evisceration. Gone are the days of washing sand out of spinach, taking the pail down to the milk store, waiting for the grocer to measure out the potatoes and apples from a barrel. No longer is the shoppers' choice of breakfast cereal limited to such few items as oatmeal, farina and cornflakes. Today, the choice is among hundreds of cereal products.

Foods that we accept as commonplace today were almost unknown a generation ago --vegetable shortenings, bake and serve dishes, heat and serve meals, new flavorings, seasonings, candies, salad dressings, canned shelled nuts, flavored popcorn, fried onion rings, powdered potatoes. Some of them add to the cost of our food budget.

EATING HABITS CHANGE

The average American's eating habits change with increased income and the passage of time.

In 1963, compared with 1947-49, he ate 15 percent less wheat products, 40 percent less fresh fruit, 15 percent less potatoes, 21 percent less milk fat solids, 18 percent fewer eggs, 49 percent less veal, and 5 percent less pork.

He ate 44 percent more beef, 65 percent more ready-to-cook chicken, 33 percent more cheese, 23 percent more canned fruit, 150 percent more frozen fruit, and more than 300 percent more frozen vegetables.

During the same period, population increased by 29 percent.

Keeping pace with changes in eating habits and population increase could be difficult. Farmers more than met the demands. Farm production climbed 31 percent and its composition changed materially.

Higher quality foods

Old line products have been improved. Vitamins are added to milk, margarine, bread, and fruit juice. Processed foods are more nutritious. Strawberries, peaches, and other fruits and vegetables are available year 'round, both fresh and frozen, and they are of higher quality than before.

Out of the kitchen, into the restaurant

We spent 20 to 25 percent of our food dollars for meals eaten away from home in recent years. This upward trend has apparently continued for some years and is an important way in which our food habits are changing. Food eaten away from home (lunches for Dad, ice cream for the children, snacks for the teenagers, and more families eating in restaurants) contribute to our changing way of life and changing food costs.

Food stores sell nonfood

When we buy groceries in a modern supermarket, we usually buy many nonfood items. Soaps, detergents, paper products, cigarettes, hardware, plastic accessories, and phonograph records are among the many items carried home with the weekly groceries and charged to food in the family budget. A study by home economists at Purdue University showed that nonfoods made up about 20 percent of the supermarket purchases in Lafayette and Indianapolis, Indiana.

EFFICIENCY AND BUSINESS

Two-thirds of the tremendous increase in agricultural production efficiency, in contrast with nonagricultural efficiency increases, was brought about mainly by increases in yield -- more milk per cow, more crop per acre, more poultry per pound of feed -- as well as the efficiency brought about by mechanization and bigger farms.

In the past 15 years, production per man steadily increased, both in the cities and on the farms. But while food marketing productivity went up between 2 and 3 percent a year, farm productivity rose at the rate of 5.4 percent a year. Productivity of all nonagricultural workers rose about 2.6 percent. This is due partly to the fact that some farm jobs have been moved to the city; e.g., farmers buy city-produced gasoline instead of growing hay and oats for horses.

No measure of wages and profits are available for all industry. Hourly earnings in food manufacturing plants averaged 6 percent lower than in all manufacturing plants in 1963. Hourly earnings in retail food stores were 5 percent higher than in all retail trade. Profit ratios are available only for manufacturing. In 1963, profits (after taxes) per dollar of sales in the food and kindred products manufacturing industry were about half the average for all manufacturing industries, but profits as a percentage of net worth in the food and kindred products industry were much nearer those of all manufacturing.

Who pays the bill?

Almost all food that was prepared in the home a generation ago can now be bought readymade in the store. New, improved foods can also be bought. Foods in new forms, and new ways of preparing food, have helped the farmer with new markets. But the consumer has to pay for these additional services and new products.

Our grandmothers used almost all flour production for home baking. Many churned their butter, made their own soup, sausage, and salad dressing.

Today, these jobs have been taken over by factory workers and machines. In 1962, 10 million people had jobs storing, transporting, processing, and merchandising farm products. About 300,000 (with a \$1.6 billion payroll) worked in meatpacking, meat preparation, and poultry processing; 275,000 (with a \$1.4 billion payroll) helped move and process fluid milk, cheese, butter, ice cream, and other dairy foods; 297,000 were employed in the baking industries (earning \$1.5 billion); and 236,000 in food canning and freezing plants (with a \$914,000 payroll).

MARKETING MARGINS AND COSTS, SOME EXAMPLES

Milk: 11 cents to the farmer, 24 cents for the consumer

A USDA study indicated that farm value of fluid milk in 1963 was 10.5 cents a quart, retail price 25 cents; that for every dollar spent for fluid milk, the farmer received 42 cents, and 58 cents went for marketing. The marketing costs broke down this way: Payroll, 28 cents; property, 10 cents; containers, 6 cents; supplies and services, 7 cents; advertising and other costs, 4 cents; profits, 3 cents.

During the 10 years from 1953 to 1963, the retail price increased 11 percent; farm value decreased 5 percent, and the marketing margin increased 26 percent. The marketing margin is the charge made by marketing firms for assembling, processing, transporting, and distributing milk.

According to the 1963 wholesale price index, paperboard container prices were up 18 percent more in 1963 than in 1947-49, glass containers were up 59 percent. Gas fuels rose 54 percent; fuels, 10 percent; bituminous coal, 17 percent.

Profits after taxes for 10 leading milk marketing firms averaged from 9 to 13 percent of net worth between 1953 to 1963. Profits after taxes averaged from 2.5 percent to 3.8 percent of sales.

Meat, from ranch to refrigerator

The difference between what the farmer gets for meat on the hoof and what the consumer pays for the meat fluctuates widely. The spread has gradually widened. The farmer's share of the consumer's dollar spent for U.S. choice beef in 1963 was 56 cents; for pork, 50 cents; and for lamb, 50 cents.

Margins for pork increased by about 36 percent from 1949 to 1963; margins for beef widened by 77 percent; and margins for lamb, 58 percent.

In 1963, margins per pound took 36 cents for beef, 36 cents for lamb, and 29 cents for pork.

Again, the farmer got less, marketing cost more.

Meat and meat products account for a relatively high proportion of family food spending, more than 25 percent, so retailers try to keep their meat prices as attractive as possible by offering frequent "specials." On the basis of data in 85 stores in three cities in 1950, the average cost of retailing meat was 10 cents a pound, wholesale weight. (No later data available) This cost is probably higher now.

Florida oranges, from tree to table

The orange picked off a tree in Florida is very different from the orange the housewife pays for at the supermarket checkout counter. After being picked, the orange is hauled from the grove to the packinghouse. It may be degreened, washed, brushed, waxed, inspected, sorted, packed, loaded onto a railroad car or truck and shipped to market. At the terminal market, it is unloaded, sold, hauled to the wholesaler's warehouse, unloaded, sold to a retailer, loaded and hauled to his store. At the retail store, it is unloaded, moved into the store, put onto the display rack, separated from damaged and spoiled fruit, and finally sold to the consumer.

The marketing charge for a 90 pound box of Florida oranges, sold in New York in 1961-62 averaged \$8.19. The Florida grower received an average of \$2.57 per box for these oranges on the tree, 24 percent of the \$10.76 retail price.

Cotton, from boll to bedsheet

A bedsheet cost \$2.42 in 1947 and the farmer got 76 cents for the cotton, or 31 percent. In 1963, the bedsheet cost \$2.25 and the farmer got 73 cents for the cotton, 32 percent.

In 1947, a man's business shirt retailed for an average price of \$4.17. The farmer received 28 cents for the cotton, or 7 percent. In 1963, the shirt cost \$4.27 and the farmer's return for the cotton was 28 cents, again 7 percent.

A man's work shirt cost \$1.70 in 1947, the farmer got 27 cents for the cotton, or 16 percent. In 1963, the work shirt cost \$1.81 and the farmer got 26 cents for the cotton, 14 percent.

The spread between the retail price of most cotton products--and the farmer's share for the cotton he supplies--has remained fairly stable in the past decade, in contrast to the farmer's share of the consumer's dollar spent for food or tobacco.

The farmer's share (farm value as a percentage of retail cost) varies among products, depending on the amount of labor in relation to the amount of cotton used. In a recent study, the farmer's share ranged from 5 percent in a girl's dress to 31 percent for a bedsheet.

Processed poultry

The road from field to table brings food from every part of our country, and from many foreign countries, in a dependable, expected flow. Many hands and many machines care for and improve food after it leaves the farm gate.

Take broilers as an example. The broiler grower may have 10,000 birds to sell at one time. Someone must catch them, put them into crates and onto a truck, deliver them to the poultry processing plant, where the birds are fed and watered until they fit into the tight schedule on the "line."

Here, killing, scalding, picking, eviscerating, cleaning, inspecting, grading, weighing, chilling, packaging, and storage may all take place within a few minutes. The broilers go to a distributor, who may again store them for a brief time. Finally they are trucked again to the retail store.

But today even this story is an oversimplification. We have not mentioned the poultry that is canned, frozen, precooked, cut up, stuffed, trussed, or eaten in restaurants. Yet, in spite of the fact that more, better quality is available, in the sizes that housewives like, with more white meat and less waste, the average retail price of broilers dropped from 60 cents a pound in 1952, to 40 cents in 1963. Returns to farmers (per retail pound) dropped from 40 cents to 20 cents, while marketing charges remained about the same.

White bread an example

White bread is an example of higher retail food prices and lower farm prices. In 1951, the average price of a pound loaf of white bread was about 16 cents; the farm value of the wheat in the bread, 2.6 cents. In 1963, the retail price of bread had risen to about 22 cents, but the farm value of wheat had dropped to 2.5 cents.

The farmers' share of breakfast

As another example of the marketing spread, consider some typical breakfast foods. In 1963, a quart of milk cost 25 cents; of this the farmer got 11 cents. From the 28 cents for a typical box of cornflakes, the farmer got 2.5 cents. Of the 30 cents for a 6 ounce can of frozen concentrated orange juice, the grower received 8.5 cents. For a dozen eggs retailing at 53 cents, the poultryman got 35 cents. For a 22-cent loaf of bread, he got 2.5 cents for the wheat.

Food Is a Bargain

Food prices have risen less than most other things in the past 15 years. Since 1947-49, retail prices of farm foods have gone up only 15 percent, whereas non-food living costs have climbed 35 percent.

It took 60 hours work in 1947-49 to buy the month's farm food supply for the average family; today, it takes 37 hours. This is the real measure of food prices.

Worker's hourly earnings have climbed 88 percent since 1947-49; farm food prices, only 15 percent.

In the United States, we spend about 19 percent of our take-home pay for food. Britishers spend 29 percent, Russians 40 percent or more.

WHY IS FOOD A BARGAIN?

- Because we can buy the food we want.
- Because farm workers each produce 208 percent more food than they did in 1947-49; prices for food (farm value) have dropped 15 percent in the same time.
- Because 1 farmer can now feed (and clothe) 31 other people, compared to 15 people in 1947-49.
- Because food marketing workers turn out about 30 percent more marketing services per worker than they did 15 years ago.
- Because we spend less of our take-home pay than ever for food -- 19 percent today, 26 percent 15 years ago. This leaves more money for recreation and education and other things.
- Because the price of farm food is up only a seventh, prices of nonfood living costs are up a third.
- Because an hour's work will buy 60 percent more farm food than in 1947-49.
- Because, if the cost of domestic farm food had risen as much as the cost of other things, we would have to spend \$1.17 to buy as much farm food as we get for \$1 today.

LESS WORK FOR MORE AND BETTER FOOD

Food in the United States has become a better buy, a bargain compared with food in other lands and lower in terms of labor cost than anywhere else in the world. For an hour's pay, our industrial workers can buy a good, normal meal for four persons. In Germany and England, it takes 2 hours work to buy the same meal; in Austria, 4 hours; in France 4-1/2 hours; in Italy more than 5 hours.

In comparison with Russia, where about 50 percent of the worker's income goes for food, and 2 workers in 5 are on the farm, our production is a phenomenal success: We produce 60 percent more from one-third fewer planted acres, with some 40 million fewer farmers and farm workers (1959).

The daily diet per person in the United States averages 3,000 calories, compared with an estimated requirement of 2,600 calories. Even so, 1 in 10 Americans early in 1961 was not getting an adequate diet.

WHAT AN HOUR'S WORK WILL BUY

One hour of work by a manufacturing worker in 1947-49 would have bought about 2 pounds of choice beef; in 1963, 3 pounds..milk, 6.5 quarts compared with about 10 quarts today...2 dozen eggs, compared with nearly 5 dozen today...11 pounds of apples compared with 14 pounds today...25 pounds of potatoes compared with 38 pounds today.

FOOD INCREASED FASTER THAN PEOPLE

About 75 percent more farm-grown food was sold in 1963 than in 1940. Population increased 43 percent. Farm population decreased in this period, while city population increased.

When farm people move to the cities, more food must be sold because these people now buy the food they formerly produced on their farms.

MORE FOOD SERVICES

Meals eaten away from home account for about \$1 of every \$4 spent for food. More people have jobs away from home and eat their lunch in restaurants and cafeterias. Half the cost of these meals is for preparation and service.

There is 20 percent more service bought with each unit of food now than there was in 1940.

When we buy prepared food, we pay for factory, labor, management, and other costs, plus what the farmer gets.

We are, of course, buying convenience--freedom from kitchen chores. We also are buying food with less waste, that needs less trimming, sorting, or washing.

HAVING THE FOOD WE WANT MAKES FOOD A BARGAIN

We want high quality, low cost orange juice the year 'round. Canned frozen concentrate now makes this possible.

We want strawberries year'round, with the same good red color flavor of the summer fresh fruit. New varieties and quick freezing now provide us with near-fresh fruit quality all year.

We preferred the flavor of freestone peaches to the cling variety. Now good canned freestones are commonly available.

People living alone and apartment dwellers wanted smaller packages; such packages are now in the stores. We wanted economy-size packages for the modern large family; these are available too.

Small increases in farm prices have little effect on retail food prices, simply because the farmer gets only about 37 cents out of each \$1 we spend for food. Saying it another way, the farm price of food must increase about 3 percent before the retail price increases 1 percent.

Retail prices of farm-grown food have remained fairly stable since 1960. Food-at-home prices have increased only 4 percent since 1957-59. The greatest increase was for canned orange juice (57 percent). Food-away-from-home prices increased 15 percent; all food prices increased 6 percent. The Consumer Price Index increased 8 percent in the same period.*

* For more details on this, write to Economic Research Service, USDA, and ask for the National Food Situation.

Sharing Our Abundance

MORE FOOD TO MORE PEOPLE

In a country characterized by agricultural abundance, it is natural that we try to see that needy and deserving people have the food they require for health and work.

We rely on business to supply the great bulk of our food, to register our preferences as consumers, and to pass back to farmers a fair return for their productive efforts. When the Federal and State governments step in--whether in production, marketing, or distribution--it is to improve the working of the commercial system in our farm and food economy.

We do not ignore people here at home who need, but cannot afford, more and better food. Lack of money is not the only reason for our underconsumption of food. The marketing system often cannot handle seasonal abundances. This difficulty may reduce benefits to both housewife and farmer.

Even among middle or higher income families, food competes with the almost endless variety of nonfood items that command attention and dollars. Among all income groups, there are families who do not realize the importance of good diets, families who don't make good selections, and the "crash dieters."

All of these situations get attention in the operation of USDA Food Distribution Programs. But, where Federal financial assistance is involved, it is the needy child or the needy family that the Department has foremost in mind. These people are the ones with the greatest potential for increased food consumption. They also are the ones where money is the most important limit to diet improvement and market expansion.

Direct Federal action in this field began during the depression of the 1930's and has continued since that time. However, more recent economic and social developments--including special problems faced by local governments in some areas--have led to more intensive efforts to get more of our food to more of our people.

"Food distribution" is a series of interrelated action programs to improve national diet levels and to expand markets for food. The activities include:

1. The Plentiful Foods Program - promotes the use of seasonally abundant and other abundant foods.
2. The Special Milk Program - inaugurated in 1954, helps schools, camps, orphanages and other nonprofit institutions make more milk available to more children.

3. The National School Lunch Program - helps elementary and secondary schools to serve balanced, moderately priced lunches to children.
4. Direct Distribution - donates Federally owned foods to schools, charitable institutions, and needy families through State and local governments.
5. The Food Stamp Program - inaugurated as a pilot program in mid-1961 in selected areas to test out another method of increasing food consumption among needy families, the program was made permanent by the Food Stamp Act of 1964.

Plentiful Foods Program

The program increases the commercial marketing of foods in peak seasonal supply. It is built on the principle that advertising pays. The Food Trade staff works with merchandising, information, and education people in food trade groups to support the sales and promotion work of producer groups. Food Trades people attempt to shift consumer demand toward current market supplies. The program can achieve permanent changes by introducing a particular food to more consumers generally--or into new geographic areas.

The Department cooperates with food retailers, food editors, and food and nutrition leaders who work directly with consumer groups.

Each month Plentiful Foods Lists are issued to trade and information groups. The public feeding industry--hotels, restaurants, industrial feeders--get an especially adapted version of these lists. Special selections are made for school lunch programs.

National School Lunch Program

Federal financial assistance to school lunch programs began in the early 1930's when surplus foods were first donated to schools.

Much earlier than that, the Department had been active in this field. Before World War I, charts were prepared to illustrate a balanced and wholesome school lunch.

The National School Lunch Program now encompasses a broad assistance program to participating schools. Each school agrees to serve a lunch meeting minimum requirements (called the Type A lunch). This includes: A protein-rich food, a generous serving of fruits and vegetables, bread and butter or fortified margarine, and one-half pint of milk. Federally donated foods are used to help fulfill these requirements, but only within the framework of the (Type A) pattern. Most of the food used in Federal school lunch programs is bought locally by the schools from local suppliers. The following table shows the relative importance of locally purchased and Government-donated foods in the 1964 National School Lunch Program:

Sources of School Lunch Food

Million Dollars

Local Purchases:

Financed by Federal funds	\$121
Financed by State and local funds	688
TOTAL	<u>\$809</u>

Government-Donated Foods:

Purchased for the program	\$ 59
Obtained from other Department supplies	129
TOTAL	<u>\$188</u>

GRAND TOTAL \$997

The National School Lunch Program aids 68,500 schools throughout the country. These schools represent about two-thirds of all elementary and secondary school students. On a typical day, about 16 million children eat the approved Type A lunch--about one-third of all children in schools. Cash assistance averages about 4.5 cents a lunch. Another 2 million benefit from Federal food donations, but not cash assistance.

Many schools in economically needy areas have a special problem. The National School Lunch Act requires that children unable to pay the full lunch price (determined by local school authorities) be served at a reduced price or free. About 10 percent of all lunches served are free or at a reduced price. If a child cannot pay, his lunch is financed out of the Federal payment, State or local sources, or the payments of other children. Far too often, however, this help has not been enough in a school that has to serve 30, 40, or 50 percent of its lunches free.

Many schools in the most needy areas--particularly isolated one- or two-room country schools and old schools in large cities--cannot have school lunch programs unless there is some organized community action to provide facilities (which cannot legally be bought with Federal school lunch funds). Especially needy schools may now be reimbursed up to 15 cents for each Type A meal they serve; the regular maximum is 9 cents.

The Special Milk Program

Participating schools and institutions buy fluid milk from local dealers, and the Federal Government reimburses the school for part of the milk cost. In places where milk is sold to children, the Federal payment makes reduced prices available. In places where milk is not sold to children, such as in orphanages, the institution uses the Federal payments to make more milk available.

About 2.6 percent of our fluid milk is now marketed under this program, about the same amount as in the National School Lunch Program. The program is available to three out of four U. S. school children.

In 1955, the Department of Agriculture canvassed 22 centralized school systems with almost 1 million students. Two-thirds more milk was used in October of

that year as in October of 1953, the year before the Special Milk Program was started.

Direct Food Distribution

For more than 25 years, the Department of Agriculture has had authority to donate food (acquired under price support and other market stabilization programs) to underconsuming groups in this country.

Donated foods are distributed outside normal business channels. The Federal Government delivers the food to States. State and local governments arrange for the subsequent handling and storage and for the actual delivery of the foods to the final recipient.

State and local welfare agencies determine which families get foods. Local needs and local conditions are taken into account. One family may be in a small rural town; another may live in a large urban area where living costs are much higher.

State standards used to select families must relate to State public assistance standards. This does not mean that only public assistance families are eligible: Foods are made available to "marginal" families--to those, for example, who suffer temporary setbacks when factories close down or during a season when there is no work.

In March 1964 a total of 6.1 million people in needy family units were receiving donated foods. The retail value of these donations came to about \$6 a person a month. In 1963, about 7 million people were in the program.

The Food Stamp Program

After 3 years of successful experimentation with a new method to increase food consumption among needy families -- The Food Stamp Program -- Congress passed a law in August 1964 to expand the program to additional areas of the country.

Under the program, low-income families exchange the amount of money they would normally spend for food for coupons worth more. For example, a family of four which normally might spend \$60 a month for food can exchange the \$60 for as much as \$90 worth of coupons. The extra \$30 represents the Federal Government's contribution. The family can then use the coupons to buy food in a regular grocery store.

The first projects operated in eight sections of the country to test the program under a variety of conditions: City of Detroit; Franklin County in the coal mining area of southern Illinois; the Virginia-Hibbing-Nashwauk area in the Mesabi iron range of Minnesota; Floyd County in Kentucky; McDowell County in West Virginia; Fayette County in Pennsylvania; San Migue County in New Mexico; and Silver Bow County in Montana. An additional 25 were added in 1962 and further expanded to a total of 43 areas in 1963. All these areas have experienced substantial unemployment.

USDA studies showed that participating families bought more food, with 80 percent of the increase accounted for by meat, dairy products, and fruits and vegetables. As a result there were significant improvements in the nutritional quality of diets. Studies also showed that retail food store sales increased by an average of 8 percent after the Food Stamp Program was inaugurated in the pilot areas.

By mid-1965, the Food Stamp Program will be expanded to reach about one million people in parts of 41 States and the District of Columbia--and is expected ultimately to reach about four million.

Fair Play in the Marketplace

GRADING, GETTING YOUR MONEY'S WORTH

Shopping for food today is much more complicated than it used to be because we buy more things from a greater variety on the shelves. Most grocery stores have a bewildering display of foods. Some of the larger ones carry as many as 8,000 items.

Food prices often include the cost of USDA grading, which enables the busy housewife or the wholesale buyer to make buying decisions more easily and accurately.

Grading enables us to know the quality of the food we buy. Some products are also graded for size; eggs, for example, are marked Grade AA, A, or B; Extra Large, Large, Medium, Small or whatever their size. However, size and quality are not related.

Buying graded foods does not necessarily mean buying only the best or most expensive. Grades offer a choice of quality, so the buyer can pick the most suitable item for a particular purpose -- for example, top grades of eggs for poaching or frying, lower grades for cooking and baking.

USDA either graded or supervised the grading of: half the butter, cheese, and nonfat dry milk produced in the United States--5.7 billion pounds; more than one-half of the beef; half of the lamb; two-thirds of the ready-to-cook poultry; one-fifth of the shell eggs; three-quarters of the frozen fruits and vegetables; one-quarter of the canned fruits and vegetables; most of the grain that moved off farms; nearly all of the cotton; and all of the tobacco sold at auction.

Grading of fresh and processed fruits and vegetables provides a vital service to this mass buying and selling industry. Federal or Federal-State grading, on a fee basis, reduces the risks involved in long-distance trading. In fiscal 1964, more than 1.3 million carloads (equivalent) of fresh vegetables and fruits were inspected -- more than in any recent year.

The volume of processed products graded has also continued to increase. Nearly 2.8 billion pounds of frozen fruits and vegetables and 180 million cases of canned fruits and vegetables were graded in 1964.

The total estimated quantity of grain inspected under the United States Grain Standards Act increased from 6.3 billion bushels in fiscal 1963 to an all-time high of 7.5 billion bushels in 1964.

MORE WHOLESOME AND SAFER, CHEAPER IN THE END

Our foods are safer and more wholesome than ever before. Today's shopper does not ask, "Is this food safe for my family?" Eating in a restaurant, we do not ordinarily question the safety of eating away from home. We almost automatically assume that the food we eat is pure, safe, wholesome, and nutritious. This feeling of confidence began with the passage of the Federal Meat Inspection Act of 1906. It has been sustained through more than half a century by conscientious, rigid inspection and by extension of inspection to other foods.

Food safety begins with farmers and ranchers, who use the latest research to protect crops and livestock from pests and diseases that could impair food. Food safety continues from the farm through marketing into our grocery stores. Our meat and poultry inspection systems are the envy and models of the world.

Nearly 29 billion pounds of red meat on a dressed weight basis were inspected and certified as wholesome in 1964. This included 14 billion pounds of beef, 13 billion pounds of pork, 658 million pounds of lamb and mutton, and 518 million pounds of veal. Of this total, some 20 billion pounds were reinspected during processing into various prepared meat foods, such as frankfurters, sausages, frozen meat dinners, and canned meat products.

But, as a safeguard to consumers, inspectors condemn and divert from food channels almost a million pounds of meat and meat products each working day, because of disease, spoilage, or contamination.

Nearly 6.5 billion pounds of ready-to-cook poultry were certified as wholesome by USDA inspectors in fiscal 1964, 87 percent of all poultry sold. This included 1 1/4 billion pounds of chickens and over a billion pounds of turkeys. Of the total, 859 million pounds were reinspected as cut-up products and 607 million pounds as ingredients in convenience foods, such as TV dinners, poultry pies, poultry a-la-king, boned roasts, etc.

The direct cost of inspection -- about a penny a month per person -- is in our tax bill. The cost of the condemned meat is shared by producers and consumers.

All of the tobacco sold in 1964 on the 175 auction markets in the United States, nearly 2.4 billion pounds, was Federally inspected.

On July 1, 1964, USDA announced establishment of minimum poultry content standards for many poultry food products, including dried, liquid and frozen soups, prepared dinners, pies, patties and fricasses -- to become effective January 1, 1965. These new standards were set up to assure consumers of more meaningful labeling of these products, and to prevent their sale under false or misleading names. Standards of quality for U. S. Fresh Fancy or Grade AA, and for Grade A eggs were raised.

MARKET NEWS

Federal and Federal-State market news service is supplied by many year-round and seasonal market news offices. Daily newspapers, television stations and radio stations relay this news to producers, middlemen and others. Reports are published for all major commodities, on prices, supplies, and other market conditions affecting source of farm products. They may be published several times a day, daily, weekly, or monthly.

In fruit and vegetable market news, activities at the initial shipping point are getting more attention, because there is more direct buying from these producing areas.

In livestock market news, more emphasis was placed on auction markets and direct sales and on meat and wool reporting, as declining lamb and beef prices presented special problems to the livestock industry.

Grain market news was expanded in 1964 into production areas of Illinois and the Mountain States to give growers, country elevators, and others up-to-the minute price, supply and demand information on grain.

Tobacco market news was furnished to all auction markets and the trade throughout 1964. About 80 percent of the million copies of reports issued were furnished directly to growers for use when their tobacco was offered for sale.

STANDARDIZATION

USDA now has about 500 sets of standards applicable to more than 300 major agricultural commodities.

Mass distribution of fruits and vegetables depends on fairly standardized and uniform produce. This enables buyers in New York, for example, to order a carload of produce from California and know in advance the quality of the shipment. In 1964, 300 standards were in effect on fresh and processed fruits and vegetables and their products.

Standards for grades of wheat were revised to help sell U. S. wheat in export markets, where competition is growing more intense. The new standards reflect improved methods for producing, handling, and inspecting wheat. They better describe the quality of the product and encourage sale of cleaner wheat.

Standards were issued in 1964 for instant nonfat dry milk -- a product that is becoming increasingly popular with consumers.

REGULATORY FUNCTIONS

Enforcement of regulatory laws insure fair dealing between buyers and sellers, keep the private enterprise system competitive, and make the bargaining power of producers more nearly equal to that of the buyers. For example:

The Packers and Stockyards Act regulates meat and poultry dealers who sell across state lines by prohibiting deceptive, discriminatory, or monopolistic practices, to preserve fair and competitive marketing.

Under this Act, investigation into marketing practices of the broiler industry was begun in 1964. Likewise, complaints were received that certain packers engaged in unfair meat merchandising and formal action was instituted against one major packer.

More than 5,600 livestock scales were tested in fiscal 1964, and 600 were found to be inaccurate and subsequently corrected. At the end of fiscal 1964, 13,337 livestock dealers, 3,779 market agencies, and 3,250 meat packers were covered by this Act.

The Perishable Agricultural Commodities Act establishes and maintains a code of good business conduct for the produce industry. It requires that interstate traders in the fruit and vegetable industry be licensed. The law authorizes the Department of Agriculture to suspend or revoke a trader's license for violating the Act.

On misbranding of products alone, investigators visited 883 firms and examined over 3,000 lots of produce to verify grade, size, state of origin, variety, net weight, and other pertinent markings. Nearly 900 other lots of produce were inspected in 1964, and 73 cases of misbranding were found.

The Federal Seed Act protects farmers, homeowners, and other seed users by guarding them against the sale of mislabeled seeds.

The U. S. Warehouse Act authorizes licensing of storage houses for agricultural commodities regarding financial responsibility and condition of facilities and stored products, to protect farmers and other patrons. Federally licensed warehouse receipts for commodities are accepted at face value by traders and financial institutions.

The Commodity Exchange Authority strives to assure correct registration of prices, protects the "hedging" services of the futures markets, and assures fair practices in futures.

Futures prices must be protected against unfair or manipulative trading because they are used as guides in the buying and selling of "cash" wheat, corn, soybeans, and other crops at country points and at terminal markets.

Hedging, which is the nonspeculative buying or selling of futures to off-set or diminish price risks in handling actual commodities, is commonly engaged in by merchants, processors, farmer cooperatives, and some individual farmers. It is an operation which obviously depends for its effectiveness on fair trading practices.

The CEA supervised futures trading for 18 commodities in fiscal 1964. The total of transactions -- 12.8 million -- was the largest on record.

The dollar value of regulated futures trading was estimated to be \$60 billion, compared with \$37 billion in 1962.

Exports and Imports

FOREIGN AGRICULTURAL TRADE IS BIG BUSINESS

Agricultural exports and imports are a booming business, affecting the entire Nation's economy. Almost every one of us is touched in some way by the buying, selling, and shipping of the \$10 billion worth of agricultural commodities moving in or out of our ports every year.

To the business world that services this trade and makes it flow, it means profits and jobs. To the farmer who produces for export, it means more buyers for his products. To the consumer, it means the coffee or tea on his breakfast table, some of the rubber for his tires and many other things he takes for granted--such as chocolate, and bananas and other tropical fruits. It means the extra things which, when combined with our own production, give us the highest standard of living in the world.

Provides employment

In 1963, about 870,000 farmworkers or 13 percent of the total were engaged in producing agricultural exports. Farmworkers who produced agricultural commodities exported as manufactured or finished goods (such as textiles, wearing apparel, cigarettes or leather products) are not included. In addition, many thousands of nonfarm workers were involved in manufacturing, assembling, transporting and doing other jobs on exported farm products.

State distribution of farm employment attributable to raw agricultural exports ranged all the way from 78,500 in North Carolina, 73,600 in Texas, and 52,100 in Kentucky, to as few as 100 in Rhode Island. Over 20 percent of the employment of farm workers in Georgia, Montana, Kentucky, Arkansas, Alabama, North Carolina, Texas, Mississippi, and North Dakota can be attributed to the farm export market.

EXPORTS

Add to farm income

The world market continues to be an important customer and source of income for American farmers. In fiscal 1964, U.S. agricultural exports reached an all-time record of \$6.1 billion, 20 percent more than the year before, and 16 percent of all that farmers sold (\$37 billion) in 1963.

One out of every four harvested acres produced for export. The output of 80 million acres of U.S. cropland moved abroad in 1963-64. The export market provided a market for three-fourths of the wheat production; two-thirds of the rice; three-fifths of the nonfat dry milk; half of the dry edible peas; two-fifths of the tallow, soybeans, and hops; a third of the cotton, rye, and prunes; a fourth of the lard, dried whole milk, and tobacco; a fifth of the raisins, dry edible beans, and cottonseed; and one-sixth of the grain sorghums, and barley.

U.S. world's largest exporter of farm products. U.S. farmers in 1964 supplied one-fifth of world agricultural exports. U.S. agricultural exports in 1963-64 required financing, inland transportation, storage, and ocean transportation for 55 million long tons of cargo, enough to fill 1.5 million freight cars or 5,500 cargo ships, an average of 15 shiploads each day.

Government programs aid exports. Of the \$6.1 billion of U.S. exports in 1963-64, a record \$4.5 billion were commercial sales for dollars and \$1.6 billion moved under P.L. 480 and AID programs (foreign currency sales, donations, barter and long-term supply and dollar credit sales). Moreover, so that products such as wheat, wheat flour, cotton, rice, nonfat dry milk, butter, butteroil, flaxseed, linseed oil, and some tobacco could compete in world markets, the Commodity Credit Corporation (CCC) made payments to exporters and sold stocks at less than domestic prices. An estimated \$2.3 billion benefited from such export payment assistance: \$1.4 billion as commercial sales for dollars and \$0.9 billion under Government-financed export programs. This export assistance in the form of payments and sales below domestic prices is estimated at \$800 million, and is not included in the value of agricultural exports. Last year's payments of \$800 million were about one-third above those of recent years, due mainly to larger sales of wheat, flour, and cotton.

Export gains mainly dollar sales. Nearly all of the 1964 export gain resulted from larger dollar sales. In the past three years, 97 percent of the rise was in commercial sales for dollars, and three percent in F. L. 480 and AID programs.

Two-thirds of exports to 10 countries. Although U.S. farm exports go to 150 countries around the world, 61 percent were destined for 10 countries.

U.S. agricultural exports: Value by country
of destination, fiscal year 1963-64

Country	Not adjusted for exports to Canada for storage, etc. ^{1/}	
	Rank	Value
		Million dollars
Japan	1	742.1
Canada	2	618.3
United Kingdom	3	448.3
The Netherlands	4	413.2
West Germany	5	410.1
India	6	400.9
Italy	7	216.7
UAR (Egypt)	8	161.4
Belgium-Luxembourg	9	150.5
France	10	142.3
Other		2,371.8
Total		6,075.6

^{1/} Exports of grains and soybeans to Canada for storage pending their use to finish loading vessels moving through the St. Lawrence Seaway destined for foreign ports.

Exports by commodities, fiscal 1964 (except where noted otherwise)

WHEAT New record for grain and grain equivalent of flour; 850 million bushels valued at \$1,519 million; 57 percent moved under P.L. 480 and AID programs.
Exports were 75 percent of 1963 wheat production and over two-fifths of world grain trade.

FEED GRAINS New record for combined volumes of corn, barley, oats, and grain sorghums: 16.1 million metric tons, including major products, valued at \$850 million; 10 percent moved under P.L. 480 and AID programs.
Exports were 23 percent of 1963 feed grain sales by farmers and about half of world feed grain trade. U.S. corn exports were the largest on record; and grain sorghums, second largest.

COTTON Five point one million bales valued at \$670 million; 21 percent moved under P.L. 480 and AID programs.
Exports were 32 percent of U.S. 1963 cotton production and about 30 percent of world cotton trade.

SOYBEANS Record of 188 million bushels valued at \$516 million; less than one percent moved under P.L. 480 and AID programs. Although included under the price support program, soybeans moved abroad without export payment, because world prices have been above domestic prices. Exports were 27 percent (41 percent including bean equivalent of oil) of the U.S. 1963 crop and around 90 percent of world soybean trade (calendar 1963).

TOBACCO Five-hundred thirty-two million pounds valued at \$421 million; 10 percent moved under P.L. 480 and AID programs. Exports were 30 percent of free world tobacco trade (1963).

FRUITS Two-hundred seventy-four million dollars; less than one percent moved under Government programs. Export value was about one-fifth of U.S. 1963 commercial sales (included \$123 million fresh, \$67 million canned, \$43 million dried, and \$36 million juices).

RICE Record of 32 million bags valued at \$217 million, 47 percent moved under P.L. 480 and AID programs. Exports were 64 percent of 1963 rice production and one-sixth of world rice trade (1963).

DAIRY PRODUCTS Two-hundred three million dollars; three-fourths moved under Government programs. Exports were about one percent of U.S. milk output (1963) and they included 1,315 million pounds of nonfat dry milk, 131 million pounds of cheese, 144 million pounds of butter, 64 million pounds of condensed sweetened milk, and 45 million pounds of evaporated unsweetened milk.

POULTRY Seventy-eight million dollars of poultry and poultry products; less than four percent moved under Government programs. Exports included 231 million pounds poultry meat, eight million dozen hatching eggs, 27 million day-old chicks, and 4.4 million pounds egg solids.

LARD Six-hundred sixty-eight million pounds valued at \$63 million; two percent value moved under Government-financed programs. Exports were 28 percent of U.S. lard production and two-thirds of world lard trade (1963).

VARIETY MEATS Record of 187 million pounds valued at \$38 million. Exports were nine percent of U.S. 1963 output, mainly beef and pork livers and beef tongue.

RED MEAT Exports are increasing. For example, beef and veal exports rose from 26 million pounds in January-October 1963 to 42 million pounds during the same period in 1964. Total red meat exports rose 21 percent in the same period, to 165 million pounds.

VEGETABLES One-hundred sixty-four million dollars; less than one percent moved under Government-financed programs. Exports were about eight percent of U.S. commercial sales. They included \$49 million fresh vegetables, \$50 million dry peas and beans, and \$33 million canned vegetables.

SOYBEAN AND COTTONSEED OIL One thousand five-hundred four million pounds (68 percent soybean oil and 32 percent cottonseed oil) valued at \$159 million; 49 percent moved under P.L. 480 and AID programs. Exports were one-fifth of 1963 oil production; 90 percent of world exports of these products (1963).

TALLOW AND GREASES Record of 2.2 billion pounds valued at \$151 million; 16 percent moved under Government programs. Exports were two-fifths of U.S. production and two-thirds of world trade (1963).

HIDES AND SKINS Record of 15.4 million pieces valued at \$82 million. Exports were two-fifths of U.S. 1963 output.

U.S. agricultural exports: Value of commercial sales
for dollars and Government programs, 1951-64

Year ended June 30	Total exports	Commercial sales for dollars	Under Government programs
		Million dollars	
1951	3,411	2,215	1,196
1952	4,053	3,430	623
1953	2,819	2,369	450
1954	2,936	2,331	605
1955	3,144	2,278	866
1956	3,496	2,129	1,367
1957	4,728	2,771	1,957
1958	4,003	2,752	1,251
1959	3,719	2,465	1,254
1960	4,517	3,207	1,310
1961	4,846	3,374	1,572
1962	5,142	3,482	1,660
1963	5,078	3,536	1,542
1964	6,074	4,512	1,562

Individual States have a great stake in foreign markets for U.S. agricultural products. The West North Central Region--Kansas, Iowa, Minnesota, Nebraska, North Dakota, Missouri, and South Dakota--was credited with \$1.6 billion of the Nation's farm exports in 1963-64. Wheat and wheat flour, feed grains, flaxseed, lard and tallow, and meats were major commodities of the region sold on foreign markets. The region's stake equaled 26 percent of the Nation's agricultural exports.

The East North Central Region--Illinois, Indiana, Ohio, Michigan, and Wisconsin--accounted for \$1.2 billion of farm exports--19 percent of the total. Important commodities for export markets were soybean oil, soybeans, protein meal, and feed grains.

The West South Central Region--Texas, Arkansas, Oklahoma, and Louisiana--accounted for an estimated \$924 million of farm goods for export, 15 percent of the Nation's export total. The region is an important supplier of rice, cotton, and cottonseed oil for export.

The other regions in order of share of farm exports were: South Atlantic, 12 percent of agricultural exports; Pacific, 10 percent; East South Central, six percent; Mountain, six percent; Middle Atlantic, three percent; and New England, less than one percent.

The top States and their respective shares of the export market were Illinois (\$504 million), Texas (\$484 million), California (\$421 million), Kansas (\$337 million), Iowa (\$331 million), and North Carolina (\$321 million.)

COMMON MARKET IMPORTANT

Our farmers need the Common Market (European Economic Community) as a major foreign customer for their goods. In fiscal 1964, the six Common Market countries (West Germany, France, Netherlands, Italy, Luxembourg, and Belgium) bought \$1.3 billion worth of U.S. farm products, with payment in dollars. This is 21 percent of our farm exports and 29 percent of all commercial exports for dollars.

Common Market explained

Eventually commerce within the Common Market will be carried on freely--much as it is among the States of the United States. There will be no tariffs among individual countries making up this customs union, and no restrictions on movement of goods, capital, services, and workers. Like the United States, the Common Market as a unit will have single policy on imports from "outside" countries.

Important steps toward merger already have been taken. Internal tariffs were cut 50 percent and quota restrictions on industrial goods traded among member countries were abolished on July 1, 1962.

Size of Common Market

In 1960, the 170 million population of the Common Market was close to that of the United States. Another 55 million was added by the association of 18 African countries with the Community. Most of these countries were previously French colonies, but are now independent nations. The preferential advantage that these countries enjoy in the Common Market gives the United States and certain Latin American countries which produce similar products cause for serious concern.

The Common Market is one of the most intensively industrialized areas of the world. It turns out steel, automobiles, machinery, chemicals, textiles, optical equipment, and thousands of other manufactured items. It has a superb transportation system. Technological skills of workers are high.

Future of Common Market

Although export prospects for a third of our agricultural exports (notably grains, rice, and poultry) are in some jeopardy, prospects for the balance are more favorable. These are mostly commodities that the Community does not produce (cotton and soybeans), by-products (tallow and hides and skins), or certain fruits and vegetables. Our exports of these commodities should expand as the Common Market continues its economic expansion. These commodities represent more than one-half billion dollars in agricultural exports to the six countries.

IMPORTS

U.S. agricultural imports up five percent. Imports of agricultural products totaled \$4.1 billion in fiscal 1964 compared with \$3.9 billion in the previous year. The increase in value resulted mainly from larger imports of complementary (noncompetitive) products, since imports of supplementary (partially competitive) commodities were about equal to 1963. Imports of supplementary commodities totaled \$2.2 billion. Complementary items rose to \$1.9 billion from \$1.7 billion.

U.S. world's second largest agricultural importer. The U.S. took one-sixth of world agricultural imports in 1963; United Kingdom is the world's leading importer, taking \$5 billion annually in recent years; West Germany is the third largest (\$3.9 billion); and Japan is fourth (about \$2.5 billion).

Per capita imports of farm products changed little since 1920's. In 1925-29 the United States imported agricultural products at the rate of \$19 per capita, compared with \$21.50 in 1963-64. The import quantity index rose 21 percent. Upward price movements accounted for (three-fourths) of the rise in value since the 1920's.

Supplementary commodities 54 percent of U.S. agricultural imports in 1963-64. In the previous year they accounted for 57 percent; during the 1950's the average share was 44 percent. Supplementary imports during the past three years have risen to over half of the agricultural total due primarily to larger purchase of cattle, meat, vegetables, copra, and tobacco as well as a sharp rise in sugar prices. Imports of meat and meat products, the major factor in the rise, accounted for nearly one-fourth of the supplementary total in 1963-64 compared with only 10 percent during the 1950's.

Complementary commodities accounted for 46 percent of agricultural imports in 1963-64. They were 43 percent in the previous year. During the 1950's an average of 56 percent of agricultural imports consisted of complementary items--those not produced in commercial volume in the United States. In the past three years, such complementary items accounted for less than half of the agricultural total. Complementary items were coffee, crude natural rubber, cocoa beans, carpet wool, bananas, tea, spices, and cordage fibers. A small volume of bananas and coffee is produced in Hawaii.

Imports may be restricted under certain conditions. Imports of agricultural commodities may be regulated under specified conditions. For example, when imports interfere with price support or stabilization programs, Section 22 of the Agricultural Adjustment Act provides that such imports may be restricted by a quota or a fee in addition to the import duty. Commodities currently controlled under Section 22 are wheat, wheat products, cotton, certain cotton wastes, and certain manufactured dairy products, and peanuts. Sugar imports are regulated by quotas under the Sugar Act of 1948.

Some supplying countries have voluntary controlled shipments to the United States. Voluntary meat agreements were signed between the United States and Australia, New Zealand, Ireland, and Mexico in 1964 to limit exports of beef, veal, and mutton to the U.S. market through 1966. The agreements are designed to prevent further expansion of imports at recent rapid rates, but at the same time will permit the supplying countries to share equitably with U.S. domestic producers in the growth of the U.S. market.

Import duties relatively low for U.S. agricultural imports. About half the agricultural imports, including nearly all complementary commodities, were duty free in fiscal 1964. For the rest, which were dutiable, ad valorem equivalent of all duties averaged 10 percent.

The ad valorem figure for agricultural imports--free and dutiable--averaged six percent. (Ad valorem equivalent is determined by dividing the duties collected by the value of the imports.)

Half of agricultural imports from 10 countries. U.S. imports of agricultural commodities come from more than 150 countries. In fiscal 1964, 54 percent came from 10 of these countries. A number of major suppliers were the newly developing countries with predominantly agricultural economies. Brazil continued to be the major supplier, with \$514 million.

Supplementary Imports, Fiscal 1964

CANE SUGAR	Three point six million short tons valued at \$539 million, mainly from the Philippines, Peru, Mexico, Dominican Republic, Australia, and Brazil. Sugar accounted for 13 percent of agricultural imports. Sugar imports accounted for 39 percent of U.S. consumption in 1963-64 and about one-fifth of world sugar imports.
MEATS	Beef, 1.1 billion pounds, valued at \$343 million, mainly from Australia, New Zealand, Ireland, and Argentina. Pork, 206 million pounds valued at \$126 million, mainly from Europe, especially Denmark, the Netherlands, and Poland. Meat imports accounted for eight percent of U.S. red meat production and 13 percent of U.S. agricultural imports.
DUTIABLE CATTLE	Six-hundred six thousand head valued at \$47 million, down sharply from the previous year. Most dutiable cattle are from Mexico and Canada, with Mexico supplying about three-fourths. Cattle imports were two percent of U.S. slaughter and one percent of U.S. farm product imports. Imported dutiable cattle were mainly stockers and feeders imported by U.S. farmers and ranchers for fattening.
VEGETABLE OILS	Oil equivalent of 1.1 billion pounds valued at \$154 million, practically all from the Philippines, Brazil, Argentina, the Congo, and Italy. Imports included copra, sesame seed, cacao butter, and coconut, castor, tung, olive, and palm kernel oils. These oils have special characteristics needed by U.S. industry. Imports of vegetable oils and materials account for around eight percent of U.S. vegetable oil consumption and four percent of U.S. agricultural imports.
FRUITS	One-hundred twenty-one million dollars, highest on record, mostly specialized commodities or supplements to off-season production. Main sources were Mexico, Canada, Philippines, Spain, Japan, and Taiwan. Imports included olives, tomatoes, pineapple, and oranges. Total imports equaled eight percent of U.S. cash receipts from fruit marketings and three percent of agricultural imports.
TOBACCO	One-hundred sixty-six pounds valued at \$103 million, principally from Greece and Turkey, consisting mainly of oriental types for blending, cigar filler, and scrap. Imports account for one-tenth of U.S. tobacco use and three percent of U.S. agricultural imports.

WOOL FOR CLOTHING	One-hundred thirty-one million pounds, valued at \$101 million, down sharply from the previous year, mainly from Australia, Union of South Africa, Argentina, and New Zealand. The National Wool Act of 1954 supported prices to encourage domestic production. Domestic output has risen slightly, but lower wool use and greater use of synthetics have done more to cut imports. Imports account for 43 percent of U.S. consumption of apparel wool and two percent of agricultural imports.
VEGETABLES	Ninety-eight million, about one-fourth above the average of the past five years. Half were vegetables imported in winter and spring months, principally from Mexico. Imports equaled five percent of vegetable marketings and two percent of U.S. agricultural imports.
DAIRY PRODUCTS	Fifty-seven million dollars, principally cheese from Switzerland, Denmark, the Netherlands, New Zealand, and Italy. Dairy products made up one percent of all U.S. agricultural imports. Cheese imports constituted five percent of U.S. consumption.
GRAINS	Forty-six million dollars, up from the previous year, principally barley and wheat from Canada. Most barley imports are used for malting in the United States. Wheat and wheat product imports are regulated by quotas. Imports of grains were one percent of grain sold and one percent of U.S. agricultural imports.
COTTON	One-hundred thirty-six thousand bales valued at \$24 million. Imports are regulated by quotas. Cotton imports, mainly from Egypt and Mexico, were less than one percent each of U.S. consumption and farm imports.

Complementary Imports in Fiscal 1964

COFFEE	Three point three billion pounds valued at \$1.1 billion, three-fourths from Latin America, mainly Brazil and Colombia. Africa has been gaining as an important supplier of coffee to the United States, mainly from Ghana, Angola, and Ethiopia. Coffee accounted for 27 percent of agricultural imports. The United States buys over half the world coffee exports. The United States is a member of the International Coffee Agreement, which includes both consuming and producing countries as members. Principal objectives of the agreement are to stabilize coffee prices and to provide a more orderly marketing system.
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RUBBER Eight-hundred fifty-three million pounds valued at \$185 million, sharply below the 1950-59 average, practically all from Asia and Liberia. Crude natural rubber accounted for five percent of agricultural imports. Crude natural rubber accounts for around one-fourth of rubber used in the United States compared with about two-fifths in the early 1950's. The United States buys one-sixth of the world's rubber exports.

COCOA BEANS Five-hundred thirty-six million pounds valued at \$122 million. Principal suppliers were Ghana, Brazil, and Nigeria, which supplied 61 percent of U.S. imports. Cocoa beans equaled three percent of agricultural imports. The United States buys one-third of world cocoa bean exports.

CARPET WOOL One-hundred eighty-two million pounds valued at \$110 million, mainly from Argentina, New Zealand, Pakistan, Syria, and Iraq. Carpet wool makes up three percent of agricultural imports. Wool accounts for only 47 percent of the surface fibers used in carpet manufacturing because of increased use of man-made fibers.

BANANAS Three point five billion pounds valued at \$93 million. Main suppliers are Ecuador, Honduras, Costa Rica, Panama, and Guatemala. Bananas accounted for two percent of agricultural imports. The United States buys two-fifths of world banana exports.

U.S. agricultural imports by country
of origin, fiscal year 1963-64

Country	Supplementary	Complementary	Total
<u>Million dollars</u>			
Brazil	76	438	514
Philippines	272	9	281
Mexico	205	74	279
Australia	252	---	252
Columbia	6	217	223
Canada	166	8	174
New Zealand	118	44	162
Dominican Republic	87	36	123
Argentina	99	24	123
Indonesia	2	94	96
Other	941	927	1,868
Total	2,224	1,871	4,095

CHAPTER V

INCOME AND COSTS

Farm Income *

Net farm income has tended to decline from the record high of \$17.3 billion in 1947. Production expenses, which took about half of each dollar of gross income in 1947, now takes over two-thirds of every dollar the farmer receives. In 1963, realized net farm income was \$12.5 billion, \$100 million below 1962. The decline in 1963 resulted from a continued increase in production expenses more than offsetting an increase in cash receipts and Government payments.

PER CAPITA INCOME HIGHER

Per capita income of the farm population in 1963 was about \$1,488; about \$976 from farm sources and \$512 from nonfarm sources. Nonfarm income is important to farm people. Per capita income in 1963 was about 4 percent higher than in 1962 because of the rise in total farm income and a further decline in farm population.

The farm population's average per capita income was about 63 percent of non-farm average income, the highest it has been since 1951. Per capita disposable personal income of nonfarm people in 1963 was \$2,181; of total population, \$2,124.

* For details on income, write to Economic Research Service, USDA and ask for Farm Income Situation.

Between 1929 and 1948 farm population was about 22 percent of total population--- farm income was about 8.5 percent of total national income. In 1950 farm people were 15 percent of the population and got 7 percent of the income. By 1960 farm people were 9 percent of the population and got 3.9 percent of the income; in 1963 farm people were 7 percent of the population and got 3.7 percent of the income.

INCOME PER FARM - \$3,500

An easy-to-read yardstick of farm income is average income* per farm, taking the big with the small, the efficient with the inefficient. Net income per farm in 1963 was \$3,500; in 1960, \$3,000; in 1950, \$2,300. This includes nonmoney such as "free" rent, garden vegetables, home-slaughtered meat and poultry.

INCOME PER HOUR - \$1.05

This was the farm income situation, with particular regard to family farm labor, in 1963:

As a group, farmers and ranchers were near the bottom of the economic ladder. The return from all labor on farms averaged about \$1.05 an hour, compared with \$2.46 in the factory. While farm production per man-hour soared nearly 150 percent since 1947-49, average earnings per hour for farm labor rose from \$1,800 a year in 1947-49 to \$2,400 in 1963.

From 1947-49 to 1963, net farm income dropped 20 percent. Factory output per man-hour went up a third, hourly earnings rose 88 percent.

As individual farmers varied greatly in income from the national averages, returns also varied by types of farming and crop conditions in different regions of the country.

Here's how farmers' hourly labor return changed from 1947-49 to 1963.

Cash grain farms in the Corn Belt, \$2.82, up 64 cents.

Hog-beef fattening farms in the Corn Belt, net loss of 19 cents, down \$2.39.

Cotton farms in the southern Piedmont, 68 cents, up 31 cents.

Cotton farms in the Texas Black Prairie, \$1.21, up 35 cents.

Cotton farms in the Texas High Plains, \$3.30, up 75 cents.

Cotton farms in the irrigated Texas High Plains, \$4.58, up 77 cents.

* Net realized

Small tobacco farms, North Carolina. \$1.90, up \$1.30.
Large tobacco-cotton farms, North Carolina, \$1.89, up \$1.06.
Peanut-cotton farms, Southern Coastal Plains, \$1.73, up \$1.14 cents.
Wheat-fallow farms, Washington and Oregon, \$2.43, down \$1.96.
Wheat-pea farms, Washington and Idaho, \$3.07, down 90 cents.
Small grain-livestock farms, Northern Plains, \$1.85, down 28 cents.
Winter wheat farms, Southern Plains, \$1.16, down \$2.09.
Wheat-grain sorghum farms, Southern Plains, 16 cents, down \$2.07.
Cattle ranches, Northern Plains, \$1.18, up 6 cents.
Cattle ranches, Intermountain region, \$1.48, up 2 cents.
Sheep ranches, Southwest, net loss at \$1.48, down \$1.25.
Sheep ranches, Northern Plains, \$2.47, up \$1.51.

FARM SIZE AND INCOME

In practically every type of farming, average farm size has increased by more than a third since the late 1930's. Average total investment, in constant dollar values, has increased considerably more. Average size farms, however, have much lower investments than are required for efficient, commercial family farms.

A recent study was made to determine the investment needed to have specified incomes for farm operators labor and management. The study assumed 1959 cost-price relationships, efficient farming, and 5 percent return for capital invested.

Under these conditions, it was found that the investment required to achieve \$2,500 in operator earnings ranged from about \$26,000 (on a South Carolina Piedmont dairy farm) to more than \$160,000 (for an Oklahoma beef cattle ranch). For operator earnings of \$5,500 in these areas, the estimated investment range was from \$36,000 to \$353,000, respectively.

Hog-beef fattening farms in the Corn Belt needed an average total capital value of more than \$86,000 in 1961, compared with \$51,000 a decade earlier. Studies of central Illinois farms have shown investments above \$130,000 are needed to meet adequate family-size farm requirements. Some family farms in the Illinois studies had investments of more than \$230,000.

Inadequate labor income has encouraged small farm operators to take one of three alternatives: Move to other occupations with more attractive income possibilities; add more land to present farms, as it becomes available; increase family incomes by combining farming with off-farm work.

Prices

FARMERS' PRICES FLUCTUATE MORE THAN OTHER PRICES

Over the years, swings in farmers' prices have been more extreme than variations of other prices. An example of such extreme swings is the sharp rise and fall in agricultural prices during and after the Korean War. Farmers benefit when the prices they receive go up faster than industrial prices. But when farmer's prices start downhill faster than prices of items they use in production, farmers find their income pinched by the familiar cost-price squeeze. Producing as much food and fiber as before the price decline, farmers and their families have fewer dollars to spend for the necessities of life.

In the 1930's prices received by farmers were considerably lower than nonfarm wholesale prices. During the 1940's, prices received by farmers rose faster and stayed higher than prices of things they buy. Since the early 1950's, prices received by farmers have edged down and have been below nonfarm prices since the mid-1950's.

Why are the prices of farm products so unstable compared, for example, with the prices of automobiles, newspapers, or haircuts? Partly it is because there is more price competition in agricultural markets. Millions of farmers compete with one another in selling their products to middlemen, who in turn compete with one another in selling them to consumers. This contrasts with the situation in many manufacturing and service industries, where competition may have little effect upon changes in price from day to day, from month to month, or even from year to year.

Of course, even agricultural markets are not perfectly competitive. Farmers have modified the structure of markets somewhat by setting up cooperative associations. Also, big processors and distributors have come into the picture. Even more important, the Government has taken an active hand in agricultural markets through such mechanisms as crop loans and marketing orders. Competition is still the dominant force in agricultural markets.

Food and fiber are among the most basic wants of all people. When food is scarce consumers will pay very high prices to get as much as they can. On the other hand, when food supplies are very plentiful, prices of farm products may drop to extremely low levels. This is especially true when there is no way of storing them or diverting them from the regular market channels. Thus, the demand for food is "inelastic with respect to price," as the economists say.

Prices tend to fluctuate more at the farm level than at the retail level because the amount of processing and marketing services included in processed foods as they reach consumers is rising. The cost of such services do not fluctuate as widely as do prices of the raw farm products going into the processed foods. Hence, wide swings in prices of farm products have a relatively small effect on prices of processed retail products.

Consumer demand is not static--that is, it does not stay fixed from time to time. It is affected by changes in the size and structure of the population, by changes in consumer tastes and habits, and especially by changes in consumer incomes.

Consumers are gradually eating more meats, and vegetables, and less cereal products. These changes are reflected back to the farmer in the prices he receives.

The great increase in the real income of American consumers in the past few decades has been one of the main controlling factors in the market. To some extent, this has raised consumer demand for farm products. But most of the increase in consumer income has gone to buy more manufactured goods and more services. This is because the demands for many of these products are "elastic with respect to income;" that is, consumers readily buy more of these products when their incomes go up.

SUPPLY AND PRICE OF FARM PRODUCTS

Generally, a high price for any commodity tends to encourage its greater production, while a low price tends to discourage production. For example, during World War II, Congress encouraged greater production by increasing price supports. Production increased substantially, especially output of supported commodities. Changes in prices sometimes induce farmers to shift from one enterprise to another--for example, from the production of feed grains to soybeans.

It is easier to expand agricultural production than to reduce it, because most farmers cannot change rapidly either their occupations or their heavy investments in land and machinery. Therefore, low prices may not only fail to reduce output of farm products, but actually may bring about increased output as farmers strive to maintain income by increasing production to offset price declines.

High level of agricultural output is directly related to improved technology such as more use of machines, fertilizers, and hybrid seeds. Although new technology lowers unit costs of production, it also tends to increase output. Technology is profitable to those who adopt it first. In the long run, the new methods expand production and reduce prices. Farmers who are either unable or unwilling to adopt the new methods find themselves in a less profitable position than before. Each farmer is hard-pressed to produce as much as he can to earn some return on his heavy investment.

THE INDEX OF PRICES

An index is an indicator, as the index finger is the indicator finger. A price index is an indicator of the average level of prices -- in relation to prices at some other period.

A price index provides a comparison of average prices for a group of items -- at a particular time -- with average prices for these items during an earlier period, usually designated as the "base period."

The Index-of-Prices-Received-by-Farmers (published regularly by USDA) is based on 52 commodities accounting for about 92 percent of all that farmers sell. Although the 1910-14 base period is prescribed by law, index numbers also are computed on a 1957-59-equals-100 basis.

Indexes are published not only for all farm products combined, but also for 2 major groups (crops, and livestock and products) and 15 sub-groups, each representing a particular type of commodity: Food grains, feed grains, etc.

From 1957 through 1963, the Index-of-Prices-Received-by-Farmers for all farm products rose only at half the rate of the Parity Index (prices-paid-by-farmers). Prices-received rose 6 percent--from 230 to 244--while prices paid climbed more steeply--12 percent from 278 to 312.

Prices paid by farmers for both family living items and production goods advanced 9 percent from 1956 to 1963. Interest rates per acre for farmers increased 97 percent and taxes per acre, 60 percent. Prices for farm machinery advanced 24 percent; motor vehicles, 22 percent; building and fencing materials, 5 percent; motor supplies, 5 percent; and farm supplies, 2 percent. Fertilizer prices averaged the same in both 1956 and 1963. Prices paid for autos and auto supplies increased 9 percent; clothing, 12 percent; and food, tobacco, and household operation, 11 percent each.

These index numbers are a measure of the relative change in prices, generally relating to the average price for all grades, qualities, and methods of sale.

PARITY IS THE FARMERS' YARDSTICK

Farmers produce in order to share in the total output of consumer goods produced in the economy; cars, appliances, furniture, clothing and vacations, for example. A measure of changes in their economic well-being relates changes in the quantity of things they consume--to quantity of things they produce. The Parity Ratio is such a measure. Average prices farmers receive for their output determine how much money they will receive for these products. Average prices they pay for goods and services needed to produce farm products determine how much they will have left over to buy the things their families need. Average prices of the things their families need--such as food, clothing, shelter, medical care, and education--determine how much of these items their families will be able to buy. Measures of changes in each of these groups of items are reflected in the overall measure call the Parity Ratio.

The Parity Ratio is the result of dividing the index-of-prices farmers receive by the index-of-prices they pay, including interest, taxes, and farm wage rates, (Parity Index). Parity is measured against the base period, 1910-14, considered by Congress a time when farm and nonfarm prices appeared in reasonable balance.

(Adjusted Parity Ratio includes all of the Parity Ratio elements, but adds the additional income farmers earn by participating in Federal programs to strengthen the earning power of the farmer. This is calculated annually.)

When the Parity Ratio is 100, prices farmers pay and prices they receive bear about the same relationship to one another as they did in 1910-14. Naturally, if the index of prices received is higher than prices paid, the Parity Ratio rises above 100. Farm products then have a higher per unit purchasing power than in the base period. When the Parity Ratio dips below 100, farm products have a lower purchasing power than in the base period.

A parity-type measure is used on the golf course. When par ("base period" in parity) for the course is 72, then 72 is the reasonable score for that course. When the player makes below par, he is doing fine; as his score rises above par, he is not doing well.

In farming, par is 100 and the ratio is reversed. When the Parity Ratio is below 100, the farmer's goods buy less.

Parity prices are a basis for determining price supports and a guide for marketing agreements. Parity prices also are the basis for judging changes in price relationships for specific products, and to find the factors behind such changes.

FARM PRODUCTS NOW AVERAGE LESS BUYING POWER THAN IN BASE PERIOD

Beginning with the 1910-14 base period average of 100, the Parity Ratio (buying power of farm products) rose to 120 in 1917--during World War I. In June 1932, during the heart of the Depression, it reached a low point of 53. However, by March 1943--during World War II--the Parity Ratio rose to 117, it then dropped slightly for two years, but, climbing again, reached a new yearly high, 115, in 1947. Since then the Parity Ratio has trended downward, and in 1963 averaged 78.

This means the bushel of wheat, quart of milk, or pound of beef--actually a composite unit of all farm products that the farmer produces--would buy about one-fifth less in 1963 than in 1910-14. For example, in 1955 it took 21 bushels of wheat at \$1.99 a bushel to buy an average-priced suit worth \$42. In 1963, when men's suits averaged \$47 each and wheat \$1.85 a bushel, the farmer needed to sell 25 bushels of wheat to buy the suit.

Wholesale milk brought 8.6 cents a quart in 1955 and 8.9 cents in 1963. The price of men's work shoes rose from \$7.10 in 1955 to \$8.74 in 1963. So, where it took 83 quarts of milk to buy a pair of shoes in 1955, the same pair of shoes required 98 quarts of milk in 1961.

Corn brought 2.4 cents a pound in 1955, 1.9 cents in 1963; cotton work shirts rose from \$1.92 to 2.25 in the same period. The corn farmer needed 80 pounds of corn to buy the work shirt in 1955; 118 pounds in 1963.

When using the Parity Ratio we must realize its limitations. It was not designed to maintain a particular level of farm income or to balance farm and nonfarm income. When we say that prices are at more than parity--a Parity Ratio above 100--we mean simply that the prices received are in a better position for buying goods and services than they were in 1910-14.

Here are some average national prices for various production items that farmers buy:

(In dollars)

Commodity	1947-49 (average)	1960	1961	1962	1963
Combine (self-propelled 12 ft.)	\$4,310.00	\$6,700.00	\$6,750.00	\$6,930.00	\$7,010.00
Tractor (55 horsepower)	N.A.	5,010.00	5,250.00	5,390.00	5,470.00
Tractor (35 horsepower)	2,100.00	3,060.00	3,090.00	3,280.00	3,340.00
Mower, tractor (7 feet)	235.00	434.00	452.00	468.00	485.00
Plow, moldboard (2 bottom, 14")	196.00	304.00	308.00	314.00	315.00
Farm wagon (less tires and box)	143.00	191.00	191.00	193.00	192.00
Fertilizer (5-10-5) (ton)	42.10	46.40	46.80	48.60	48.66
House paint (gallon)	5.23	6.37	6.44	6.45	6.38
Limestone (ton)	3.75	4.66	4.67	4.75	4.78
Pitchfork (3 tine)	N.A.	3.93	3.98	4.11	4.18

Here are some average national prices for various commodities farmers sell:

Commodity and Unit*	1947-49 (average)	1960	1961	1962	1963
Corn, Per Bushel	\$1.64	\$1.00	\$1.08	\$1.10	\$1.09
Wheat, Per Bushel	2.14	1.74	1.83	2.04	1.85
Potatoes, Per lb.	2.5¢	2.0¢	1.4¢	1.7¢	1.6¢
Snap Beans, Per lb.	8.3¢	8.6¢	8.6¢	9.3¢	9.4¢
Lettuce, Per lb.	4.4¢	4.1¢	3.4¢	4.3¢	4.2¢
Tomatoes, Per lb.	8.2¢	7.7¢	7.3¢	7.2¢	7.5¢
Apples, Fresh, Per lb.	4.0¢	5.7¢	5.0¢	5.2¢	5.2¢
Hogs, Per lb.	21.9¢	15.3¢	16.6¢	16.3¢	14.9¢
Beef Cattle, Per lb.	20.2¢	20.4¢	20.2¢	21.3¢	19.9¢
Lambs, Per lb.	21.9¢	17.9¢	15.8¢	17.8¢	18.1¢
Broilers, Live, Per lb.	32.1¢	16.9¢	13.9¢	15.2¢	14.5¢
Turkeys, Live, Per lb.	37.0¢	25.4¢	18.9¢	21.6¢	22.3¢
Eggs, Per Dozen	46.6¢	36.0¢	35.5¢	33.6¢	34.4¢
Milk, Wholesale, Per qt.	9.7¢	9.3¢	9.3¢	9.0¢	9.0¢

* Farmers sell these commodities in wholesale units (hundredweights, bushels, etc.). These wholesale units have been converted to retail units (pounds, quarts, etc.) which are more familiar to the average person.

LARGER CREDIT NEEDS

Higher prices, larger farms, more technology and machines, specialization, and more long-term capital spending require farmers to borrow more money to continue as commercial producers.

During the past 10 years the number of farms in the U.S. decreased about 30 percent. But in spite of this, capital and credit needs of farmers have been increasing. During these 10 years, the value of livestock, machinery and equipment, crops in storage, and household furnishings on farms has been increasing at about 1 to 2 percent a year. Total production expenses have been rising at about 4 percent a year.

Some 64 percent of commercial farmers had outstanding debt in late 1960 the latest year for which there is data. Size of farm mortgage loans increased 44 percent between 1959 and 1963. Size of short-term loans from Production Credit Associations increased about 40 percent in the same period.

Total farm debt on January 1, 1964, was \$35 billion, 10 percent higher than in 1963 and double the farm debt of 10 years ago. Farm mortgage debt increased 106 percent while other farm debt rose 138 percent.

Despite the marked increase in debt in recent years, on January 1, 1964 farm debt was 14 percent of the value of farm assets, compared with 10 percent in 1950. But in 1950 income was 105 percent of debt; in 1963 net income was only 42 percent of debt.

Commercial banks are the most important source of non-real-estate credit. On January 1, 1963, they held 41 percent of the \$14.5 billion non-real-estate debt (excluding CCC price support loans). Production Credit Associations held 13 percent; Farmers Home Administration held 4 percent. Merchants, dealers and miscellaneous sources held 42 percent.

Insurance companies and the Federal land banks each held about one-fifth of the debt secured by farm real estate on January 1, 1963, and commercial banks held 14 percent. Two fifths of this debt was held by individuals and other miscellaneous lenders.

About 67 percent of farmland purchases required credit-financing in recent years. In 1963, however, this had increased to 73 percent. Not only was a greater proportion of sales credit-financed, but buyers financed a greater part of the purchase price. Continuing a long-established upward trend in March 1963, average amount of debt incurred was 70 percent of the sale price. However, this amount of debt as a percentage of the purchase price is higher than it would be if the debt were related to the total market value of the land offered as security.

The seller was the creditor in 38 percent of the farmland transfers involving credit (1963). Commercial banks supplied loan funds for 19 percent of all credit sales, insurance companies financed 13 percent, Federal land banks financed 9 percent, individuals other than sellers financed 6 percent, and "others" (including Farmers Home Administration) financed 15 percent.

\$1.7 billion in interest

Highest 1963 interest rate on outstanding farm mortgage debt was in the Southeast and Delta States (5.7 percent) and lowest in the Lake States (4.9 percent). Average farm-mortgage interest rates for the nation as a whole have increased from a low of about 4.4 percent during World War II to 5.3 percent in 1963.

Total annual interest charges on this debt have climbed much faster than rates because of the large increase in borrowings. Annual interest charges on farm mortgages were \$246 million in 1943 (24 cents per acre), \$345 million in 1953 (32 cents an acre), and \$845 million in 1963 (83 cents an acre). Annual interest charges on short-term farm production debt rose from \$427 million in 1953 to \$925 million in 1963. Altogether farmers paid \$1,773 million in interest charges in 1963, \$191 million more than in 1962 and double that of 10 years ago.

\$3.8 BILLION IN TAXES

Taxes levied on farm real estate totaled \$1,468 billion in 1963, 5 percent above the 1962 total and double the 1950 total of \$742 million.

In 1963, State and local tax levies on farm real estate averaged \$1.43 an acre, compared with \$1.36 in 1962 and an average of 62 cents in 1947-49. Taxes per acre in 1963 were \$1.03 per \$100 of value, the highest level since World War II. Farm personal property taxes levied in 1963 are estimated at \$295 million, up from \$128 million in 1947.

In 1962 farmers were charged \$177 million in auto license and permit taxes, up from \$97 million in 1947; \$458 million State and Federal motor fuel taxes, up from \$190 million 1947. Sales taxes totaled more than \$300 million; income taxes paid by farm population amounted to about \$1.3 billion.

The steady rise in farm property taxes during the last 21 years is a direct outgrowth of the steadily expanding needs of local governments. Rural communities, of course, are not alone in this regard. Total taxes paid on nonfarm property, in fact, have risen somewhat more rapidly since World War II than those paid on farm property. However, new investments in homes, industrial property and the like have increased substantially, thus providing a much larger tax base, while in agriculture the physical plant, especially land and buildings, has shown relatively slower growth.

Improving Income

Agriculture is the Nation's biggest industry. But, unlike most nonagricultural giants, it is decentralized. No single corporation or group of companies dominates farm production. Also, agriculture's products have little or no identity. Unlike nationally sold manufactured goods, one farmer's corn or wheat is about the same as another farmer's.

One result of this widespread decentralization and unidentified produce is that the decision of an individual farm operator cannot markedly affect national agricultural production.

The steel industry may operate at 50 or 60 percent of capacity when demand for its product is low. Auto manufacturers try to match production to estimated sales.

State laws require oil producers to restrict production to specific quota. Federal law prohibits shipment of oil in violation of State law.

Farmers generally do not limit production to maintain profits. All the producers of a product must agree to adjust production for the limits to have the desired effect. As a result of decentralization, individual commercial family farmers generally increase production regardless of prices. They do this because their unit costs of production will continue about the same or may be lower, and their total income increases as production increases. When many commercial family farmers are forced to maintain income by increasing production, the price structure weakens and they find themselves in a vicious cycle of increased production, lower prices and depressed incomes. The lower farm prices do little to stimulate increased consumption of many foods because the sophisticated food distribution system of today requires an increasing proportion of the consumer's food dollar thus, reduced farm prices have little relative effect on retail food prices. Even though retail prices may be reduced by lower farm prices, people eat just so much food. As production increases and prices decrease, demand remains about the same.

An example is staple foods such as bread and potatoes. People will generally not eat more of these if the price drops a few cents...and for bread it would take a catastrophic farm price drop to even affect bread prices by a few cents. Even if the farmer gave his wheat away free, the price of bread would drop only 2.5 cents for a pound loaf. When a man's income doubles, he may buy two cars and a bigger house and more clothes, but he ordinarily will not eat more bread.

Economists generally agree that without supports agricultural prices would fall faster than production increases. For a 10 percent increase in production, prices will probably fall 20 or 30 percent.

So, as agriculture has been unable to adjust production as other industry does, and as farm income fluctuates widely and is often low compared with nonfarm income, farmers have tried to better their lot through improved bargaining powers.

Methods that have been developed to provide bargaining strength include: Price support programs; acreage allotments and marketing quotas; marketing orders and agreements; and cooperatives and contract production.

Price supports and Government storage programs have helped farmer bargaining strength and have benefited consumers through stable prices and assuring abundant supplies of high quality foods.

THE PRICE SUPPORT PROGRAM

Today's price support program dates back to 1933 after some unsuccessful attempts by the Federal Farm Board and others, during the 1920's. The Commodity Credit Corporation (CCC) first supported prices of corn and cotton. Production loans were made available at harvest time, to permit orderly marketing and greater price stability through the year. The Agricultural Adjustment Act of 1938 made supports mandatory for several crops, and increased the importance of price support in stabilizing farm commodity prices. During two wars, the program encouraged the necessary increased output, by minimizing price risks. Heavy production resulting largely from a yield explosion for many supported crops in recent years has put pressure on market prices, and resulted in greatly expanded support activity.

How It Works

Agricultural price support programs are financed by CCC, after approval by the Board of Directors and the Secretary of Agriculture, and are administered by United States Department of Agriculture.

Price support operations in the field are a responsibility of State and county Agricultural Stabilization and Conservation (ASC) committees. The committees also administer acreage allotments, marketing quotas, supply adjustment programs for cotton, feed grains and wheat, conservation reserve, cropland conversion, storage, emergency livestock feed programs, agricultural conservation and the Sugar Act.

Generally located at the county seat, the county ASC Office is the farmer's contact for handling most supported commodities. He gets information on program details and help in preparing price support documents, and his eligibility for price supports is determined. Cooperative marketing associations handle some phases of the programs for tobacco, peanuts, gum naval stores, cotton, and soybeans. Dairy price support is handled through purchases from processors by the Minneapolis Commodity Office.

Four Different Ways

Prices are supported in four different ways: (1) Loans, (2) Purchases from farmers, (3) Purchases of processed products, and (4) Payments and marketing certificates. Of the \$3.4 billion in price-support extended on 1963 crops through June 30, 1964, loans accounted for \$2.76 billion and purchases for \$657 million.

Loans help the farmer in two major ways: (1) By providing farmers cash for the commodity at the support level; and (2) By strengthening prices of a commodity by removing surpluses from the market.

The loan program tends to level out marketings. To get needed cash, farmers usually market their crops at harvest, which sometimes gluts markets, puts a burden on the transportation system, and lowers prices. The loan program gives farmers a chance to get a loan at support prices and to hold their crops without risk, for later marketing. With marketing spread over the season, price swings are reduced. If the price fails to rise above the loan level, however, the farmer can deliver his commodity to CCC instead of repaying the loan.

Purchases from the farmers are made by CCC through the county ASC office. If market prices at the time price-support loans mature are less than support prices, the producer may deliver a stipulated quantity and receive the support price. Both loans and purchases are covered by the price-support agreement farmers enter into at harvest time. For 1964, wheat, rice, corn, tung oil, honey, barley, grain sorghum, oats, rye, soybeans, dry beans, peanuts and flaxseed are included under purchase provisions.

Purchases of processed food products. Dairy products are supported by purchase of cheese, butter, and nonfat dry milk from manufacturers and handlers. These purchases maintain average farm prices for butterfat and manufacturing milk at support prices. Part of the cost of extra fluid milk consumption by the Armed Forces is paid by CCC. Cottonseed may be bought from producers and ginneries to maintain cottonseed prices. Processed foods such as wheat flour, cornmeal, bulgur, and rolled wheat made from farm crops in surplus are purchased for disposal under domestic and foreign donation programs.

The payment method of support is used for wool, mohair, sugar and for a part of the feed grain and cotton support price and marketing certificates for a part of the wheat price.

Many factors influence individual farmer's participation in price-support programs. Farmers may decide not to participate in price-support and related

programs for a variety of reasons. As a result, market prices of some supported commodities may drop below the support level, particularly where farmer participation is low. But for most commodities in most areas, participation is extensive and usually results in loans and purchases taking surplus production off the market. This keeps market prices at or near the support price to the benefit of both participants and non-participants.

Farmers participate in price support and related programs because:

- 1) Better income prospects. The price protection offered for their commodity is a strong incentive for participation.
- 2) Farm problem solution. Some farmers participate because they believe in the need for farm programs to help solve their problems. They believe that their participation helps make the programs work through cooperative effort to solve a problem which they recognize.
- 3) Orderly marketing. This feature of price-support appeals to some farmers. Price-support loans enable them to get immediate income from their production at harvest when market prices are seasonally depressed. The loan permits them to withhold their crops until better prices later in the season.
- 4) Conservation possibilities. Many farmers participate because price-support and related programs enable them to increase conservation work on their land while continuing their current level of income.

Factors that may influence farmers not to participate in price-support are:

- 1) Inadequate storage. To get a price-support loan, a producer must store his commodity either in his own space or commercial storage. This may not be readily available. Others may lack farm storage space and sell at the market price rather than pay storage costs during the loan period.
- 2) Quantity of a commodity owned by a producer may not be large enough to make participation worthwhile in his judgement.
- 3) Inconvenience of paper work involved in price-support may discourage some farmers.
- 4) Acreage eligibility requirements for price-support participation may be such that individual farmers do not participate because their farming operations are unique.
- 5) They disagree with price-support. Some farmers do not like the support program.
- 6) Price in the market is favorable in relation to support price, and farmers who otherwise may be eligible for price-support sell in the market rather than putting the commodity under support loan.

"SECTION 32" PROGRAMS

Surplus removal programs, different from other Department of Agriculture price assistance programs, are carried out under the authority of section 32 of Public Law 320 (74th Congress - 1935). Thirty percent of gross receipts from duties collected under the customs laws are used for section 32 purchases.

Section 32 programs provide limited price assistance to farmers; make it possible to find useful outlets for many surplus farm commodities that might otherwise be wasted; and improve the diets of school children and needy persons.

The law requires that section 32 programs be devoted principally to perishable nonbasic commodities. However funds can be used for basic commodities, chiefly to expand export markets.

In deciding which commodities should receive section 32 assistance, the Department of Agriculture also considers these factors:

1. Supply of the commodity in relation to demand.
2. Levels at which prices of other commodities are being supported.
3. Availability of funds.
4. Perishability of the commodity.
5. Importance of the commodity to agriculture and the national economy.
6. Ability to dispose of commodities. (This also means that purchases must be limited to quantities that eligible outlets can use.)
7. Need for offsetting temporary losses of export markets.
8. Ability and willingness of the producers to keep supplies in line with demand.
9. Assurances by processors, whenever practicable, that the producers of the commodity involved have received or will receive the maximum benefit from the surplus removal operation.

Section 32 programs have given aid to every segment of the agricultural economy. Products given assistance in recent years include eggs, butter, cheese, nonfat dry milk, turkeys, beef, pork, lamb, dry beans, lard, potatoes and various other vegetables, fruits, cotton and tobacco.

Most of this assistance takes the form of purchases -- and donation of the foods to schools, institutions, and the needy. However, some assistance has been given through export and through diversion programs.

Export programs make it possible to sell a product overseas at the competitive world price, even though this may be below the prevailing price in this country. Section 32 funds may be used to pay an exporter a differential, so that he can

pay domestic producers at the going rate and still sell the product overseas at a profit.

Diversion programs may take a number of different forms, including the development of new uses and byproducts or diversion to secondary uses. One such program was the development of new date products. Another was for the diversion of potatoes to the manufacture of starch and the feeding of livestock. Section 32 funds are used to reimburse producers (directly or indirectly through processors) for the lower returns they would normally get for selling products for such uses.

In fiscal 1964, \$290 million was spent for removal of surplus agricultural commodities under section 32 programs. \$122 million was spent for the purchase of canned and frozen beef, canned chopped meat, and lard; \$85 million for butter, cheese, and nonfat dry milk; \$15.3 million for canned and frozen broilers; \$14 million for frozen turkeys; \$12 million for dried eggs; \$15 million for fruits and vegetables; and \$4.8 million for dry edible beans. \$1.3 million was spent to divert surplus potatoes to non-food uses. \$28.6 million was spent on the Food Stamp Plan.

MARKETING AGREEMENT AND ORDER PROGRAMS

Marketing agreements and orders are designed to improve returns to growers through orderly marketing. These are self-help programs through which growers can work together to solve marketing problems they cannot solve individually.

Marketing agreement and order programs now in effect principally affect the marketing of fluid milk and certain fruits, vegetables, and tree nuts.

Fruit and Vegetable Marketing Order Programs, An Illustration

In fiscal 1962 there were 44 marketing order programs in effect covering fruits, vegetables and tree nuts produced in 25 States and having a farm value of \$1.3 billion.

A marketing order may be issued by the Secretary of Agriculture only after a public hearing on the proposed order and after it has been approved by growers voting in a referendum.

Under a fruit and vegetable marketing agreement and order program, an industry can regulate the handling and marketing of its crops to prevent erratic flow to market, reduce the total supply in primary market channels, prevent low quality produce from depressing prices, standardize containers, or prevent unfair trading. These programs also provide a means of financing marketing research and development projects, and the collection of statistics and shipping information needed for effective operation of the program.

Every marketing order program for fruits and vegetables is operated at the local level by an administrative committee made up of growers, or growers and handlers, nominated by the industry and appointed by the Secretary of Agriculture. The principal function of an administrative committee is to recommend regulations

to be issued under the marketing order. If these recommendations meet with Department approval, they are issued by the Secretary of Agriculture and become binding upon the whole industry.

Whenever the quality of domestic shipments of certain commodities is regulated under marketing orders, the Secretary of Agriculture must issue import regulations with the same or equivalent requirements.

Milk Marketing Orders

At the end of fiscal 1964, there were 82 Federal milk marketing orders in effect, through which 172,000 dairy farmers delivered 54 billion pounds of milk to handlers regulated under Federal milk orders. The value of this milk at minimum order prices was \$2.3 billion. The milk sold in these marketing areas supplied about two-thirds of the total non-farm population in the United States.

These voluntary milk marketing orders are used to stabilize milk markets and to assure an adequate supply of fresh, wholesome milk for consumers. This is accomplished through establishment of minimum prices which milk handlers or dealers must pay for milk from dairy farmers.

A milk marketing order is generally started by dairy farmers. Before an order may be issued, however, the Secretary of Agriculture must conduct an investigation into market conditions and hold a public hearing. Then the order must be approved by at least two-thirds of the dairymen supplying milk to the market, with a three-fourths favorable vote required under some circumstances.

The same public hearing and farmer approval system is generally required before provisions of the order may be changed.

CONTRACT FARMING, VERTICAL COORDINATION AND ABUNDANCE

When the farmer shares some of the management decisions or risks with one or more related businesses, his farming has been defined as "Coordinated farming." Contract farming lies between absolute vertical integration (ownership of farm by the business) and loose buying-selling arrangements (between the farmer and another businessman). The farmer can maintain more control when the coordinating firm is a cooperative of which he is a member.

In some areas, where farmers get low wage returns and cannot switch to other crops, coordinated farming contracts have opened new markets. These contracts allow the contractor to share management of the farm with the farmer. The Southeast broiler industry is an example.

Commercial broiler production had the fastest growth rate of any major farm product in recent years. Production increased from about 34 million in 1934 to more than 2 billion broilers in 1963. Gross income grew from \$72 million in 1940 to more than \$1 billion in 1963.

Most of the increase was in the Southeastern and South Central States. These States produced only 100 million broilers in 1940. In 1963 they produced over

1.6 billion birds. The increase in this region resulted, in part, from under-employment and low-wage rates.

Overall growth of the industry, and shift of regions, resulted partly from contract production. With contracts, farmers need less money to operate with and carry less risk. Industry growth also resulted from technological improvements that reduced the cost of producing broilers under contract.

The first large-scale commercial broiler producers sold their birds on a cash or open-account basis. Heavy disease losses and price risks discouraged many of them. Production, supply, and marketing activity needed to be coordinated. Feed dealers and broiler processors began to take part of the growers' risks through contract arrangements; their goal was to hold or increase their sales volume, preserve uniform quality, and meet consumers' specifications.

Contracting arrangements have changed over the years. The trend is to provide the farmer a guaranteed minimum return for his labor and investment, even if broiler prices do not cover production costs. Each contract must be analyzed to determine if it provides for both labor and maintenance of the farm.

The industry changed fast as production increased on a more closely coordinated basis. Small independent producers almost disappeared. Many smaller feed dealers are no longer in business. Ninety percent of all broilers in 1960 were produced on about 28,000 farms. Larger, more completely integrated businesses, including some with hatcheries and some with processing plants, spread their production risks with many contract flocks and by increasing the number of company-owned flocks produced with hired labor.

We eat three times as many broilers as we did in 1950 because of low broiler prices, uniform quality, and promotion campaigns. Broiler consumption averaged 27 pounds per capita in 1963, only 8.7 pounds in 1950. Despite increased production efficiency, prices have been below direct production costs during much of the past decade.

Broiler production today presents one form of close farm coordination. Fieldmen employed by the contractor do much of the farm management. Farmers reduce their marketing risks and get a guaranteed labor return. Production is concentrated in operations that make fullest use of labor-saving equipment. This equipment can permit lowest per unit cost and high output per man. In some instances, the broiler producer has been relegated to a pieceworker role, especially when the contractor also controls the buildings and equipment. An eventual result of contract production is development of producer bargaining groups. Some evidence of this trend is appearing in the poultry industry now.

Contracts That Maintain Bargaining Power

The sugarbeet industry is quite a different example of contract farming. Nearly all sugarbeet growers in this country have contracts with processors that insure them a market.

Sugarbeets are a heavy, bulky, perishable commodity, whose processing is complex and costly. They are grown under contracts that guarantee a market for growers and a source of beets for processors. Processors and grower bargaining associations negotiate contracts that tie the price of sugarbeets to the price of sugar. The contracts also specify acreage, delivery dates, payment schedules, growers' association dues, seed, growing methods, and marketing practices.

The Government, as required in the Sugar Act, analyzes contracts and determines that prices are fair reasonable. The Sugar Act also prevents excessive planting, specifies wage standards, and bans child labor. Growers receive Government payments for compliance.

Farmer's receive advice on production practices from agriculturists employed by sugar companies. They may also get help in obtaining seasonal labor.

A recent study of sugarbeet production in the Red River Valley showed that 80 percent of the farmers believe they maintain management authority in production. Most of the others, who indicated disagreement with contractor's representatives, said that they (the farmers) make the final decision on their operation.

Other Examples Of Contracting and Integration

There are many other examples of contract farming and vertical integration. Various forms of the arrangements have existed for a long time in the production of commercial fruits and tree nuts.

Contract farming accounts for about two-thirds of the vegetables produced for canning and freezing. Another 5 percent is vertically integrated. About 10 percent of the fresh-market vegetables and melons are produced under contract and about 25 percent under vertical integration -- principally by grower-shippers.

Variations of vertical coordination are many. These range from simple verbal agreements for processing or marketing, to the complete ownership and operation of the farm by business. Contract farming lies between these limits. It is one way for a farmer to share some of his decisions and risks with his supplier, processor, or distributor, while still remaining independent.

MAJOR FORCES IN CHANGE -- A NATIONAL MARKET

The trend from a rural, agricultural Nation to a predominately city-town-industrial one has brought major changes in farm production. Channeling the food and fiber required by 192 million Americans from the farm to the consumer's plate is a vast, complex operation.

National chainstores and others need large amounts of farm goods to satisfy their millions of customers. They need quality and uniformity to back up their sales promotion and advertising. To meet these market needs, merchandisers, processors, farmers (either alone or through their cooperatives), and their suppliers have sought to coordinate activities or to contract for

production, processing, and marketing.

Farmers' advantages may be reduced marketing risks, a better price, more capital, the only access to a market, or reduced costs of supplies and services. Problems for farmers may include pressure to expand output, the need to reorganize the farm operation to meet the competition of specialized low-cost producers, and the loss of management.

The farmer's ability to maintain his bargaining power in the national market place will depend on competition among contracting firms; cooperatives that can compete and perform a price-setting function; development of farmer bargaining associations; and on his having information on prices and supply and demand conditions.

COOPERATIVES

Farmers and other rural people use cooperatives for a wide range of jobs -- to market their products, buy supplies, and get services on a group basis.

Cooperatives help rural people in five general ways: They help farmers earn more money by marketing products efficiently; they provide quality products; obtain quality supplies; hold down costs; and help the local community by providing jobs and doing business in the area.

Memberships in all types of rural cooperatives total about 22 million, with many rural people belonging to several cooperatives. The 9,000 marketing, farm supply, and related service cooperatives have over 7 million memberships. This includes duplications of memberships among various types of cooperatives.

Other rural cooperatives include the credit cooperatives in the Farm Credit System, rural electric and telephone cooperatives, credit unions, insurance, irrigation, and similar service types.

Farmers marketed more than \$10 billion worth of farm products through cooperatives in 1961-62, the last year for which there is data available. This represented about a fourth of total farm marketings.

They obtained about a fifth of their farm supplies through cooperatives and had these associations manufacture most of the feed, fertilizer, and petroleum products obtained through them.

Farmer-members of marketing and supply cooperatives earn an estimated quarter of a billion dollars extra income in the refunds made by their cooperatives. This is because cooperatives give to members the money left over after the costs of operation are paid and sufficient reserves set aside.

Recent trends in cooperatives show them diversifying their operations so that one association will sell, buy, and provide other services for the member. Some of them have also moved into more processing of farm products and more manufacturing of supplies.

A number have merged or coordinated activities in other ways. Thus they can do a more efficient job for the farmer-member in the new mass distribution system, where only a few buyers and sellers handle large volumes of the products and supplies of the farmers.

Cooperatives are still relatively small when compared with other businesses that deal in farm products and supplies. About 73 percent of the marketing, purchasing, and related service cooperatives did a business of under \$1 million in 1961-62 (latest figures available) and 97 percent were under \$10 million.

Volume up, number down

The latest annual survey of farmer cooperatives shows that from June 1961 to July 1962 cooperatives increased total dollar volume of business, decreased slightly in memberships, and continued a downward trend in number.

Total gross volume of business amounted to more than \$17 billion, 6 percent over the previous year. Total net business, excluding intercooperative business, amounted to more than \$13 billion -- 5 percent over the previous year.

Total number of marketing, farm supply, and related service cooperatives dropped to 9,039, compared with 9,300 in the previous year.

Net marketing volume represented 78 percent of total cooperative business.

Net farm supply volume represented 20 percent of total cooperative volume.

Related services, accounted for 2 percent of total business of cooperatives.

-- Dairy products continued to rank first in total marketing volume.

-- Feed continued in first place among farm production supplies.

-- 77 percent of all cooperatives handled one or more farm supplies.

-- 71 percent of all cooperatives did some marketing.

Much of the decrease in number of associations was the result of continued mergers, consolidations, and acquisitions among cooperatives. Insofar as the emphasis on larger and more efficient business operations continues, a continuing downward trend in number of cooperatives is favorable.

Memberships down

The decrease in total memberships in farmer's buying and selling cooperatives -- from 7.2 million to 7.1 million -- is in line with the downward trend since 1955-56, attributed to the decline in total number of farmers.

Membership figures contain duplication, as many farmers are members of more than one cooperative and may be counted more than once. It is not possible to eliminate this duplication under current reporting methods.

Marketing

The gross value of all farm products marketed by farmer cooperatives in 1961-62, including intercooperative business, amounted to \$13 billion. Net value, excluding interassociation business, amounted to \$10.2 billion, an increase of nearly 7 percent over 1960-61. Increases in cotton products, dairy products, fruits and vegetables, grain, rice, livestock, sugar and tobacco largely contributed to this increase.

Dairy products continued in first place in the value of farm products marketed by cooperatives, with a net value--excluding intercooperative business--of more than \$3 billion, 6 percent over the net volume in 1960-61. Dairy products accounted for 34 percent of the net value of all farm products marketed by farmer cooperatives.

Grain, including soybeans and soybean products, remained in second place. The net value of grain handled by cooperatives amounted to \$2.2 billion -- 3 percent over the previous year. This commodity group accounted for 21 percent of the total net value of all farm products marketed by cooperatives in 1960-61.

Livestock and livestock products showed an increase for the first time since 1958-59. This commodity group remained in third place with a net value of \$1.5 billion, 6 percent less than the previous year. Livestock and livestock products accounted for 15 percent of the total net value of all farm products marketed by cooperatives in 1960-61.

Farm supplies

Gross value of all production supplies handled by farmer cooperatives in 1961-62 was \$3.9 billion. Net value amounted to \$2.6 billion, 2 percent higher.

Feed continued in first place in the supply group, with a net value of \$936 million -- up 5 percent over the previous year. Feed accounted for 36 percent of the total net value of all farm supplies handled.

Petroleum products held second place among farm supplies with a net value of \$625 million, slightly more than the previous year. In 1961-62 petroleum products accounted for 24 percent of the total net value of farm production supplies handled by cooperatives.

Fertilizer retained third place with a net value of \$387 million, up 7 percent over the previous year. It accounted for 15 percent of the net value of all production supplies handled.

Related services

About 5,500 cooperatives performed services related to marketing and farm supply operations -- such as trucking, storage, ginning, drying, grinding, spraying, and similar services -- 61 percent of the total number of associations.

The 207 cooperatives specifically classified as related service cooperatives did not include credit, electric, dairy herd improvement, artificial breeding, or production types of cooperatives.

Total receipts for services decreased slightly. In 1961-62 these service receipts amounted to \$302 million, compared with \$306 million in the previous year.

On June 30, 1964, there were 740 Federal land bank associations with nearly 380,000 members, and 484 Production Credit Associations with 540,000 members. On the same date, the 13 Banks for Cooperatives had loans outstanding to about 2,860 cooperatives.

On January 1, 1964, there were 1,420 dairy herd improvement associations with nearly 68,000 members, and 44 dairy cattle artificial breeding associations with nearly 460,000 members.

The latest figures available for rural credit unions, on January 1, 1962, show 682 associations with 233,000 members.

On June 30, 1963, there were 912 rural electric cooperatives with 4.8 million members and 209 rural telephone cooperatives with 422,000 members.

In 1963, there were 21 rural health cooperatives with 62,000 members, and in 1964 an estimated 1,500 farmers' mutual fire insurance companies with 3.5 million members.

In 1959, there were over 7,700 mutual irrigation companies with 162,000 members.

The leading farmer cooperatives, although substantial in size, are still relatively small compared with major noncooperative firms that deal in farm supplies or farm products. Cooperatives handle only a quarter of what farmers sell and a fifth of what they buy.

Farmers' ownership interest in farmer cooperatives of all kinds, including electric, credit, insurance, and other types of service cooperatives has grown from \$2 billion in 1950 to \$5.1 billion in 1964. The increase in farmers' investments in marketing and purchasing associations alone has moved from \$1.1 billion to \$2.4 billion in these same years.

HIGHLIGHTS OF 1964 *

Total farm production in 1964 was nearly as large as the 1963 record output, and 10 percent above the 1957-59 average. Combined production of all crops was 3 percent below 1963, but livestock output set a new high, the fourth year in a row.

Growing and harvesting conditions were generally not as favorable in 1964 as in 1963. Acreage of major crops harvested was slightly larger than a year before, but crop production per acre averaged 3 percent less. However, new production records were set for rice, peanuts, sugarcane, and soybeans.

Feed grain production in 1964 was 13 percent less than in 1963, due to lower acreage and yields. Domestic use declined but exports rose to a record high.

Food grain production in 1964 was up sharply due to larger acreage and higher average yields. Domestic use and exports are expected to be about equal to production, holding the mid-1965 carryover near a year earlier.

Vegetable production in 1964 was down about 5 percent from 1963, due largely to lower yields. Potato production is estimated at 11 percent less than in 1963 and the smallest crop since 1957.

Farmers grew about the same amount of cotton in 1964 as in 1963. Tobacco production was down slightly but sugar crops reached a record high.

Record output of livestock and livestock products in 1964 was due primarily to gains in milk, poultry products and beef cattle. Milk production was up nearly 1 billion pounds in 1964 compared with 1963; milk output per cow more than offset a 3 percent decline in the number of cows milked. Production of eggs, broilers, and turkeys each was larger in 1964 than in 1963.

Beef production hit a record high in 1964 but pork and lamb output were down from a year earlier. Red meat consumption was about 174 pounds per person -- beef, 100 pounds; pork 64 pounds; veal, lamb and mutton, 10 pounds.

Gross farm income in 1964 totaled around \$42 billion, a record high. Farm production expenses increased slightly, resulting in net farm income of \$12.4 billion, nearly the same as in 1963. Realized net income per farm rose about 3 percent in 1964 to \$3,600, as the 30-year trend toward fewer, larger and more highly mechanized farms continued. Even so, 40 percent of U. S. farms sold less than \$2,500 worth of agricultural products during the year.

* For details of 1964 Crop Production, write to Statistical Reporting Service, U. S. Department of Agriculture, Washington, D. C., 20250 and ask for Crop Production, 1964 Annual Summary.

Appendix 1

SUMMARIES OF STATE AGRICULTURE*

ALABAMA had 100,000 farms in 1963, of which about 50 percent were commercial. Average farm size was 160 acres. The State had a total of 16.6 million farmland acres, about 51 percent of total land area. Average value of farm land and buildings was \$19,400. Farm marketings in 1963 were \$604 million; \$342 million from livestock, \$262 million from crops. Average gross income per farm was \$6,806, net income per farm was \$2,460. Total cash receipts from farming were \$625 million. Leading farm commodities in 1963 were: Cotton, \$158 million; broilers, \$108 million; and cattle, \$86 million.

ALASKA had 400 farms in 1963, of which about 50 percent were commercial. Average farm size was 2,300 acres. The State had a total of 900,000 farmland acres, or about 0.2 percent of total land area. Average value of farm land and buildings was about \$55,000. Farm marketings in 1963 were \$4 million; \$3 million from livestock, \$1 million from crops. Leading farm commodities in 1963 were: Milk, \$2.2 million; potatoes, \$600,000; and eggs, \$400,000.

ARIZONA had 7,000 farms in 1963, of which about 70 percent were commercial. Average farm size was 6,429 acres. The State had a total of 45 million farmland acres, or about 55 percent of total land area. Average value of farm land and buildings was \$404,000. Farm marketings in 1963 were \$549 million; \$201 million from livestock, \$348 million from crops. Average gross income per farm was \$77,482, net income per farm was \$27,293. Total cash receipts from farming were \$554 million. Leading farm commodities in 1963 were: Cotton, \$183 million; cattle, \$161 million; and lettuce, \$54 million.

ARKANSAS had 82,000 farms in 1963, of which about 55 percent were commercial. Average farm size was 211 acres. The State had a total of 17.5 million farmland acres, or about 49 percent of total land area. Average value of farm land and buildings was \$33,200. Farm marketings in 1963 were \$854 million; \$302 million from livestock, \$552 million from crops. Average gross income per farm was \$10,811, net income per farm was \$4,232. Total cash receipts from farming were \$868 million. Leading farm commodities in 1963 were: Cotton, \$287 million; soybeans, \$133 million; broilers, \$117 million; and rice, \$92 million.

*Data on number of farms, average size, and total farmland acres for 1963 are from USDA and not comparable to 1959 Census data. The count on number of farms was about 8 percent short in the 1959 Census of Agriculture. Also, Census figures did not include farms which were wholly in the Soil Bank in 1959 and which reported no sales.

CALIFORNIA had 95,000 farms in 1963, of which about 67 percent were commercial. Average farm size was 407 acres. The State had a total of 39 million farmland acres, or about 37 percent of total land area. Average value of farm land and buildings was \$199,800. Farm marketings in 1963 were \$3.4 billion; \$1.4 billion from livestock, \$2 billion from crops. Average gross income per farm was \$37,050, net income per farm was \$9,578. Total cash receipts from farming were \$3,496 million. Leading farm commodities in 1963 were: Cattle, \$604 million; milk, \$388 million; and cotton, \$325 million; eggs, \$193 million; and grapes, \$158 million.

COLORADO had 33,000 farms in 1963, of which about 78 percent were commercial. Average farm size was 1,242 acres. The State had a total of 41 million farmland acres, or about 58 percent of total land area. Average value of farm land and buildings was \$86,300. Farm marketings in 1963 were \$669 million: \$464 million from livestock, \$205 million from crops. Average gross income per farm was \$21,976, net income per farm was \$4,233. Total cash receipts from farming were \$712 million. Leading farm commodities in 1963 were: Cattle, \$356 million; wheat, \$54 million; sugar beets, \$41 million; and milk, \$36 million.

CONNECTICUT had 7,700 farms in 1963, of which about 65 percent were commercial. Average farm size was about 129 acres. The State had a million farmland acres, or about 28 percent of total land area. Average value of farm land and buildings was \$60,100. Farm marketings in 1963 were \$145 million; \$90 million from livestock, \$55 million from crops. Average gross income per farm was \$19,950, net income per farm was \$3,348. Total cash receipts from farming were \$146 million. Leading farm commodities in 1963 were: Milk, \$42 million; eggs, \$28 million; and tobacco, \$23 million.

DELAWARE had 5,000 farms in 1963, of which about 75 percent were commercial. Average farm size was about 152 acres. The State had a total of 800,000 farmland acres, or about 60 percent of total land area. Average value of farm land and buildings was \$46,700. Farm marketings in 1963 were \$116 million; \$81 million from livestock, \$35 million from crops. Average gross income per farm was \$24,173, net income per farm was \$4,936. Total cash receipts from farming were \$118 million. Leading farm commodities in 1963 were: Broilers, \$62 million; soybeans, \$10 million; milk, \$8 million; and corn, \$8 million.

FLORIDA had 39,000 farms in 1963, of which about 52 percent were commercial. Average farm size was 408 acres. The State had a total of 17 million farmland acres, or about 44 percent of total land area. Average value of farm land and buildings was \$123,000. Farm marketings in 1963 were \$888 million; \$232 million from livestock, \$656 million from crops. Average gross income per farm was \$21,834, net income per farm was \$9,311. Total cash receipts from farming were \$900 million. Leading farm commodities in 1963 were: Oranges, \$223 million; milk, \$88 million; cattle, \$83 million; and tomatoes, \$54 million.

GEORGIA had 92,000 farms in 1963, of which about 58 percent were commercial. Average farm size was 218 acres. The State had a total of 21 million farmland acres, or about 53 percent of total land area. Average value of farm land and buildings was \$27,300. Farm marketings in 1963 were \$851 million; \$447 million from livestock, \$404 million from crops. Average gross income per farm was \$10,135, net income per farm was \$2,917. Total cash receipts from farming were \$883 million. Leading farm commodities in 1963 were: Broilers, \$169 million; eggs, \$106 million; cotton, \$96 million; and peanuts, \$81 million.

HAWAII had 6,600 farms in 1963, of which about 47 percent were commercial. Average farm size was 394 acres. The State had a total of 2.6 million farmland acres, or about 60 percent of total land area. Farm marketings in 1963 were \$349 million; \$34 million from livestock, \$315 million from crops. Leading farm commodities in 1963 were: Sugar products, \$188 million; pineapple products, \$116 million; milk, \$11 million; and beef cattle, \$10 million.

IDAHO had 36,300 farms in 1963, of which about 76 percent were commercial. Average farm size was 422 acres. The State had a total of 15 million farmland acres, or about 29 percent of total land area. Average value of farm land and buildings was \$58,500. Farm marketings in 1963 were \$457 million; \$194 million from livestock, \$263 million from crops. Average gross income per farm was \$13,922, net income per farm was \$2,959. Total cash receipts from farming were \$478 million. Leading farm commodities in 1963 were: Cattle, \$94 million; potatoes, \$62 million; and wheat, \$58 million.

ILLINOIS had 144,000 farms in 1963, of which about 80 percent were commercial. Average farm size was 210 acres. The State had a total of 31 million farmland acres, or about 85 percent of total land area. Average value of farm land and buildings was \$76,200. Farm marketings in 1963 were \$2.3 billion; \$1.1 billion from livestock, \$1.2 billion from crops. Average gross income per farm was \$16,869, net income per farm was \$4,861. Total cash receipts from farming were \$2.4 billion. Leading farm commodities in 1963 were: Corn, \$517 million; cattle, \$462 million; hogs, \$436 million; and soybeans, \$393 million.

INDIANA had 122,000 farms in 1963, of which about 65 percent were commercial. Average farm size was 156 acres. The State had a total of 19.2 million farmland acres, or about 80 percent of total land area. Average value of farm land and buildings was \$47,100. Farm marketings in 1963 were \$1.2 billion; \$684 million from livestock, \$561 million from crops. Average gross income per farm was \$11,597, net income per farm was \$3,690. Total cash receipts from farming were \$1.3 billion. Leading farm commodities in 1963 were: Hogs, \$301 million; cattle, \$159 million; corn, \$212 million; and soybeans, \$185 million.

IOWA had 171,000 farms in 1963, of which about 88 percent were commercial. Average farm size was about 202 acres. The State had a total of 35 million farmland acres, or about 94 percent of total land area. Average value of farm land and buildings was \$55,900. Farm marketings in 1963 were \$2.7 billion; \$2 billion from livestock, \$675 million from crops. Average gross income per farm was \$16,794, net income per farm was \$4,573. Total cash receipts from farming were \$2.8 billion. Leading farm commodities in 1963 were: Cattle, \$932 million; hogs, \$712 million; corn, \$367 million; and soybeans, \$251 million.

KANSAS had 101,000 farms in 1963, of which about 80 percent were commercial. Average farm size was 494 acres. The State had a total of 50 million farm-land acres, or about 96 percent of total land area. Average value of farm land and buildings was \$61,000. Farm marketings in 1963 were \$1.3 billion; \$762 million from livestock, \$566 million from crops. Average gross income per farm was \$14,552, net income per farm was \$4,256. Total cash receipts from farming were \$1.4 billion. Leading farm commodities in 1963 were: Cattle, \$581 million; wheat, \$374 million; sorghum grain, \$84 million; and hogs, \$79 million.

KENTUCKY had 144,000 farms in 1963, of which about 57 percent were commercial. Average farm size was 122 acres. The State had a total of 18 million farm-land acres, or about 67 percent of total land area. Average value of farm land and buildings was \$21,600. Farm marketings in 1963 were \$648 million; \$319 million from livestock, \$329 million from crops. Average gross income per farm was \$5,364, net income per farm was \$2,173. Total cash receipts from farming were \$680 million. Leading farm commodities in 1963 were: Tobacco, \$259 million; cattle, \$128 million; and milk, \$93 million.

LOUISIANA had 68,000 farms in 1963, of which about 47 percent were commercial. Average farm size was 150 acres. The State had a total of 11 million farm-land acres, or about 36 percent of total land area. Average value of farm land and buildings was \$32,800. Farm marketings in 1963 were \$490 million; \$158 million from livestock, \$332 million from crops. Average gross income per farm was \$7,857, net income per farm was \$3,191. Total cash receipts from farming were \$507 million. Leading farm commodities in 1963 were: Cotton, \$120 million; rice, \$82 million; cattle, \$78 million; and sugarcane, \$74 million.

MAINE had 16,300 farms in 1963, of which about 56 percent were commercial. Average farm size was 195 acres. The State had a total of 3.3 million farm-land acres, or about 16 percent of total land area. Average value of farm land and buildings was \$18,400. Farm marketings in 1963 were \$194 million; \$129 million from livestock, \$65 million from crops. Average gross income per farm was \$12,538, net income per farm was \$2,031. Total cash receipts from farming were \$197 million. Leading farm commodities in 1963 were: Potatoes, \$43 million; broilers, \$41 million; and milk \$40 million.

MARYLAND had 23,600 farms in 1963, of which about 64 percent were commercial. Average farm size was 150 acres. The State had a total of 3.6 million farm-land acres, or about 55 percent of total land area. Average value of farm land and buildings was \$55,600. Farm marketings in 1963 were \$290 million; \$195 million from livestock, \$95 million from crops. Average gross income per farm was \$13,771, net income per farm was \$2,793. Total cash receipts from farming were \$295 million. Leading farm commodities in 1963 were: Broilers, \$77 million; milk, \$73 million; cattle, \$26 million; and corn, \$16 million.

MASSACHUSETTS had 10,400 farms in 1963, of which about 64 percent were commercial. Average farm size was 109 acres. The State had a total of 1.2 million farmland acres, or about 23 percent of total land area. Average value of farm land and buildings was \$41,800. Farm marketings in 1963 were \$159 million; \$95 million from livestock, \$64 million from crops. Average gross income per farm was \$16,046, net income per farm was \$2,876. Total cash receipts from farming were \$160 million. Leading farm commodities in 1963 were: Milk, \$50 million; eggs, \$23 million; apples, \$7 million, and cranberries, \$7 million.

MICHIGAN had 105,000 farms in 1963, of which about 58 percent were commercial. Average farm size was 136 acres. The State had a total of 14.8 million farmland acres, or about 41 percent of total land area. Average value of farm land and buildings was \$31,000. Farm marketings in 1963 were \$755 million; \$403 million from livestock, \$352 million from crops. Average gross income per farm was \$8,541, net income per farm was \$2,479. Total cash receipts from farming were \$792 million. Leading farm commodities in 1963 were: Milk, \$216 million; cattle, \$90 million; wheat, \$64 million, and dry beans, \$48 million.

MINNESOTA had 147,000 farms in 1963, of which about 83 percent were commercial. Average farm size was about 220 acres. The State had a total of 32.4 million farmland acres, or about 60 percent of total land area. Average value of farm land and buildings was \$38,600. Farm marketings in 1963 were \$1.5 billion; over \$1 billion from livestock, \$411 million from crops. Average gross income per farm was \$11,405, net income per farm was \$3,228. Total cash receipts from farming were \$1.6 billion. Leading farm commodities in 1963 were: Cattle, \$337 million; milk, \$311 million; hogs, \$220 million; and soybeans, \$126 million.

MISSISSIPPI had 114,000 farms in 1963, of which about 53 percent were commercial. Average farm size was 163 acres. The State had a total of 19 million farmland acres, or about 62 percent of total land area. Average value of farm land and buildings was \$22,700. Farm marketings in 1963 were \$783 million; \$294 million from livestock, \$489 million from crops. Average gross income per farm was \$7,352, net income per farm was \$3,060. Total cash receipts from farming were \$801 million. Leading farm commodities in 1963 were: Cotton, \$383 million; cattle, \$96 million; and broilers, \$70 million.

MISSOURI had 162,000 farms in 1963, of which about 63 percent were commercial. Average farm size was 212 acres. The State had a total of 36 million farmland acres, or about 75 percent of total land area. Average value of farm land and buildings was \$30,600. Farm marketings in 1963 were \$1.2 billion; \$739 million from livestock, \$443 million from crops. Average gross income per farm was \$8,478, net income per farm was \$2,981. Total cash receipts from farming were \$1.3 billion. Leading farm commodities in 1963 were: Cattle, \$312 million; hogs, \$224 million; and soybeans, \$160 million.

MONTANA had 30,400 farms in 1963, of which about 81 percent were commercial. Average farm size was 2,194 acres. The State had a total of 67 million farm-land acres, or about 69 percent of total land area. Average value of farm land and buildings was \$97,900. Farm marketings in 1963 were \$404 million; \$186 million from livestock, \$218 million from crops. Average gross income per farm was \$14,805, net income per farm was \$4,292. Total cash receipts from farming were \$430 million. Leading farm commodities in 1963 were: Cattle, \$137 million; wheat, \$157 million; barley, \$25 million; and sugar beets, \$15 million.

NEBRASKA had 84,000 farms in 1963, of which about 89 percent were commercial. Average farm size was 573 acres. The State had a total of 48 million farm-land acres, or about 97 percent of total land area. Average value of farm land and buildings was \$61,100. Farm marketings in 1963 were \$1.3 billion; \$843 million from livestock, \$457 million from crops. Average gross income per farm was \$17,034, net income per farm was \$4,434. Total cash receipts from farming were \$1.4 billion. Leading farm commodities in 1963 were: Cattle, \$588 million; corn, \$188 million; hogs, \$156 million; and wheat, \$112 million.

NEVADA had 2,200 farms in 1963, of which about 69 percent were commercial. Average farm size was 4,046 acres. The State had a total of 8.7 million farm-land acres, or about 16 percent of total land area. Average value of farmland and buildings was \$200,700. Farm marketings in 1963 were \$45 million; \$36 million from livestock, \$9 million from crops. Average gross income per farm was \$21,399, net income per farm was \$1,820. Total cash receipts from farming were \$46 million. Leading farm commodities in 1963 were: Cattle, \$26 million; milk, \$6 million; and hay, \$4 million.

NEW HAMPSHIRE had 5,500 farms in 1963, of which about 52 percent were commercial. Average farm size was 204 acres. The State had a total of 1.2 million farmland acres, or about 20 percent of total land area. Average value of farm land and buildings was \$23,800. Farm marketings in 1963 were \$54 million; \$43 million from livestock, \$11 million from crops. Average gross income per farm was \$10,683, net income per farm was \$874. Total cash receipts from farming were \$55 million. Leading farm commodities in 1963 were: Milk, \$23 million; eggs, \$12 million; apples, \$3 million; and broilers, \$3 million.

NEW JERSEY had 13,000 farms in 1963, of which about 76 percent were commercial. Average farm size was 102 acres. The State had a total of 1.4 million farmland acres, or about 29 percent of total land area. Average value of farm land and buildings was \$62,000. Farm marketings in 1963 were \$271 million; \$139 million from livestock, \$133 million from crops. Average gross income per farm was \$22,768, net income per farm was \$4,906. Total cash receipts from farming were \$275 million. Leading farm commodities in 1963 were: Milk, \$59 million; eggs, \$57 million; and tomatoes, \$14 million.

NEW MEXICO had 15,600 farms in 1963, of which about 62 percent were commercial. Average farm size was 3,314 acres. The State had a total of 52 million farmland acres, or about 60 percent of total land area. Average value of farm land and buildings was \$107,600. Farm marketings in 1963 were \$273 million; \$167 million from livestock, \$106 million from crops. Average gross income per farm was \$18,593, net income per farm was \$6,407. Total cash receipts from farming were \$288 million. Leading farm commodities in 1963 were: Cattle, \$135 million; cotton, \$57 million; and milk, \$13 million.

NEW YORK had 72,000 farms in 1963, of which about 69 percent were commercial. Average farm size was 188 acres. The State had a total of 14 million farmland acres, or about 44 percent of total land area. Average value of farm land and buildings was \$32,100. Farm marketings in 1963 were \$865 million; \$607 million from livestock, \$258 million from crops. Average gross income per farm was \$13,508, net income per farm was \$3,344. Total cash receipts from farming were \$883 million. Leading farm commodities in 1963 were: Milk, \$451 million; cattle, \$69 million; eggs, \$56 million; apples, \$38 million; and potatoes, \$33 million.

NORTH CAROLINA had 195,000 farms in 1963, of which about 63 percent were commercial. Average farm size was 88 acres. The State had a total of 17.4 million farmland acres, or about 51 percent of total land area. Average value of farm land and buildings was \$21,000. Farm marketings in 1963 were \$1.2 billion; \$345 million from livestock, \$817 million from crops. Average gross income per farm was \$6,796, net income per farm was \$2,907. Total cash receipts from farming were \$1.2 billion. Leading farm commodities in 1963 were: Tobacco, \$547 million; broilers, \$99 million; milk, \$70 million; and cotton, \$58 million.

NORTH DAKOTA had 50,500 farms in 1963, of which about 92 percent were commercial. Average farm size was 834 acres. The State had a total of 42 million farmland acres, or about 93 percent of total land area. Average value of farm land and buildings was \$52,400. Farm marketings in 1963 were \$662 million; \$208 million from livestock, \$454 million from crops. Average gross income per farm was \$15,078, net income per farm was \$5,537. Total cash receipts from farming were \$743 million. Leading farm commodities in 1963 were: Wheat, \$286 million; cattle, \$129 million; barley, \$58 million; and flaxseed, \$52 million.

OHIO had 130,000 farms in 1963, of which about 61 percent were commercial. Average farm size was 142 acres. The State had a total of 18.8 million farmland acres, or about 71 percent of total land area. Average value of farm land and buildings was \$41,700. Farm marketings in 1963 were over \$1 billion; \$617 million from livestock, \$443 million from crops. Average gross income per farm was \$9,396, net income per farm was \$2,556. Total cash receipts from farming were \$1.1 billion. Leading farm commodities in 1963 were: Milk, \$211 million; cattle, \$158 million; hogs, \$139 million; soybeans, \$106 million; and corn, \$97 million.

OKLAHOMA had 88,000 farms in 1963, of which about 60 percent were commercial. Average farm size was 425 acres. The State had a total of 37 million farmland acres, or about 81 percent of total land area. Average value of farm land and buildings was \$49,800. Farm marketings in 1963 were \$658 million; \$389 million from livestock, \$269 million from crops. Average gross income per farm was \$8,322, net income per farm was \$2,293. Total cash receipts from farming were \$712 million. Leading farm commodities in 1963 were: Cattle, \$289 million; wheat, \$136 million; and cotton, \$57 million.

OREGON had 44,500 farms in 1963, of which about 54 percent were commercial. Average farm size was 476 acres. The State had a total of 21 million farmland acres, or about 35 percent of total land area. Average value of farm land and buildings was \$53,400. Farm marketings in 1963 were \$419 million; \$183 million from livestock, \$236 million from crops. Average gross income per farm was \$10,580, net income per farm was \$1,973. Total cash receipts from farming were \$432 million. Leading farm commodities in 1963 were: Cattle, \$99 million; wheat, \$44 million; and milk, \$43 million.

PENNSYLVANIA had 88,000 farms in 1963, of which about 59 percent were commercial. Average farm size was about 131 acres. The State had a total of 12 million farmland acres, or about 41 percent of total land area. Average value of farm land and buildings was \$30,300. Farm marketings in 1963 were \$779 million; \$575 million from livestock, \$204 million from crops. Average gross income per farm was \$10,196, net income per farm was \$2,231. Total cash receipts from farming were \$798 million. Leading farm commodities in 1963 were: Milk, \$319 million; eggs, \$96 million; and cattle, \$90 million.

RHODE ISLAND had 1,200 farms in 1963, of which about 78 percent were commercial. Average farm size was 104 acres. The State had a total of 100,000 farmland acres, or about 20 percent of total land area. Average value of farm land and buildings was \$49,000. Farm marketings in 1963 were \$20 million; \$12 million from livestock, \$8 million from crops. Average gross income per farm was \$18,405, net income per farm was \$2,215. Total cash receipts from farming were \$20 million. Leading farm commodities in 1963 were: Milk, \$6 million; eggs, \$3 million; and potatoes, \$3 million.

SOUTH CAROLINA had 68,000 farms in 1963, of which about 54 percent were commercial. Average farm size was 132 acres. The State had a total of 9.7 million farmland acres, or about 47 percent of total land area. Average value of farm land and buildings was \$22,500. Farm marketings in 1963 were \$399 million; \$113 million from livestock, \$285 million from crops. Average gross income per farm was \$6,477, net income per farm was \$2,409. Total cash receipts from farming were \$417 million. Leading farm commodities in 1963 were: Tobacco, \$97 million; cotton, \$85 million; eggs, \$31 million; and soybeans, \$31 million.

SOUTH DAKOTA had 54,000 farms in 1963, of which about 89 percent were commercial. Average farm size was 833 acres. The State had a total of 45 million farmland acres, or about 92 percent of total land area. Average value of farm land and buildings was \$53,200. Farm marketings in 1963 were \$658 million; \$489 million from livestock, \$169 million from crops. Average gross income per farm was \$13,665, net income per farm was \$3,709. Total cash receipts from farming were \$718 million. Leading farm commodities in 1963 were: Cattle, \$284 million; hogs, \$108 million; and wheat, \$57 million.

TENNESSEE had 154,000 farms in 1963, of which about 52 percent were commercial. Average farm size was 105 acres. The State had a total of 16 million farmland acres, or about 60 percent of total land area. Average value of farm land and buildings was \$18,200. Farm marketings in 1963 were \$554 million; \$279 million from livestock, \$275 million from crops. Average gross income per farm was \$4,400, net income per farm was \$1,565. Total cash receipts from farming were \$582 million. Leading commodities in 1963 were: Cotton, \$116 million; cattle, \$99 million; milk, \$84 million; and tobacco, \$73 million.

TEXAS had 210,000 farms in 1963, of which about 61 percent were commercial. Average farm size was about 733 acres. The State had a total of 154 million farmland acres, or about 85 percent of total land area. Average value of farm land and buildings was \$64,950. Farm marketings in 1963 were more than \$2.5 billion; \$1.1 billion from livestock, \$1.4 billion from crops. Average gross income per farm was \$12,969, net income per farm was \$4,351. Total cash receipts from farming were \$2.7 billion. Leading farm commodities in 1963 were: Cattle, \$698 million; cotton, \$841 million; and grain sorghum, \$229 million.

UTAH had 16,000 farms in 1963, of which about 61 percent were commercial. Average farm size was 850 acres. The State had a total of 13.6 million farmland acres, or about 24 percent of total land area. Average value of farm land and buildings was \$59,700. Farm marketings in 1963 were \$167 million; \$129 million from livestock, \$38 million from crops. Average gross income per farm was \$11,226, net income per farm was \$2,228. Total cash receipts from farming were \$176 million. Leading commodities in 1963 were: Cattle, \$48 million; milk, \$30 million; and turkeys, \$14 million.

VERMONT had 11,600 farms in 1963, of which about 75 percent were commercial. Average farm size was about 263 acres. The State had a total of 3.1 million farmland acres, or about 50 percent of total land area. Average value of farm land and buildings was \$24,000. Farm marketings in 1963 were \$125 million; \$112 million from livestock, \$13 million from crops. Average gross income per farm was \$11,773, net income per farm was \$2,335. Total cash receipts from farming were \$127 million. Leading farm commodities in 1963 were: Milk, \$93 million; cattle, \$11 million; and eggs, \$5 million.

VIRGINIA had 89,000 farms in 1963, of which about 51 percent were commercial. Average farm size was 147 acres. The State had a total of 13.3 million farmland acres, or about 52 percent of total land area. Average value of farm land and buildings was 25,800. Farm marketings in 1963 were \$477 million; \$270 million from livestock, \$207 million from crops. Average gross income per farm was \$6,526, net income per farm was \$1,871. Total cash receipts from farming were \$491 million. Leading farm commodities in 1963 were: Cattle, \$82 million; tobacco, \$80 million; milk, \$80 million; and eggs, \$34 million.

WASHINGTON had 52,000 farms in 1963, of which about 55 percent were commercial. Average farm size was 350 acres. The State had a total of 18.2 million farmland acres, or about 44 percent of total land area. Average value of farm land and buildings was \$57,800. Farm marketings in 1963 were \$587 million; \$213 million from livestock, \$374 million from crops. Average gross income per farm was \$12,381, net income per farm was \$3,191. Total cash receipts from farming were \$604 million. Leading farm commodities in 1963 were: Wheat, \$107 million; milk, \$81 million; cattle, \$70 million; and apples, \$50 million.

WEST VIRGINIA had 38,000 farms in 1963, of which about 29 percent were commercial. Average farm size was 163 acres. The State had a total of 6.5 million farmland acres, or about 39 percent of total land area. Average value of farm land and buildings was \$14,300. Farm marketings in 1963 were \$98 million; \$76 million from livestock, \$22 million from crops. Average gross income per farm was \$3,374, net income per farm was \$811. Total cash receipts from farming were \$102 million. Leading farm commodities in 1963 were: Cattle, \$24 million; milk, \$22 million; broilers, \$20 million; and apples, \$9 million.

WISCONSIN had 127,000 farms in 1963, of which about 81 percent were commercial. Average farm size was about 170 acres. The State had a total of 22 million farmland acres, or about 60 percent of total land area. Average value of farm land and buildings was \$24,900. Farm marketings in 1963 were \$1.1 billion; \$975 million from livestock, \$144 million from crops. Average gross income per farm was \$9,874, net income per farm was \$2,975. Total cash receipts from farming were \$1.2 billion. Leading farm commodities in 1963 were: Milk, \$594 million; cattle, \$163 million; and hogs, \$103 million.

WYOMING had 9,600 farms in 1963, of which about 83 percent were commercial. Average farm size was 3,729 acres. The State had a total of 36 million farmland acres, or about 58 percent of total land area. Average value of farm land and buildings was \$108,200. Farm marketings in 1963 were \$162 million; \$129 million from livestock, \$33 million from crops. Average gross income per farm was \$18,594, net income per farm was \$4,085. Total cash receipts from farming were \$172 million. Leading farm commodities in 1963 were: Cattle, \$92 million; sheep, \$17 million; sugar beets, \$13 million; and wool, \$10 million.

Appendix 2

GLOSSARY *

Acetate. A salt of acetic acid; cellulose acetate or one of its products (as a textile, fiber, yarn or fabric).

Acreage Allotment.

National -- The number of acres of a basic price-supported commodity. At average yields, this will produce the amount normally needed for domestic use and export, as determined in the price-support legislation affecting the commodity.

Farm -- An individual farm's share of the national acreage allotment of a basic commodity, determined in accordance with a formula prescribed by law.

Adequate-size farm. A farm with enough resources and productivity to generate enough income to cover expenses for: (1) An acceptable level of family living, (2) current operating expenses, (3) interest on debt payments, and (4) to allow for capital growth to keep in step with technological growth.

Ad valorem. Rate based on value. Example: A tariff of 10 percent ad valorem would be 10 cents on every \$1.00 of value of the imported commodity.

Agricultural attaches. Agricultural specialists of U.S. Department of Agriculture's Foreign Agriculture Service, attached to 60 U.S. diplomatic posts to represent the interests of American agriculture abroad.

Agricultural ladder. An expression used to describe the classic path to farm ownership; viz, working as a hired hand, acquiring equity in livestock and equipment, renting a farm, buying a farm, and, finally, owning an unencumbered farm.

Agricultural market development. All activities, in the U.S. and abroad, to maintain and expand the flow of U.S. farm products to consumers. Much development work is conducted cooperatively by U.S. Department of Agriculture and private trade groups.

* A more comprehensive listing is: A Dictionary of Agricultural and Allied Terminology, published by the Michigan State University Press, East Lansing, Michigan, 1962. 905 pp. \$15.00.

For a more complete listing of international agricultural definitions see: Terms Used in International Agricultural Trade, (FAS-M-152, October 1963) available from Information Division, Foreign Agricultural Service, U.S. Department of Agriculture, Washington, D.C. 20250.

Animal unit. A measure of livestock numbers by which kinds, classes, sizes, and ages are converted to an approximate common standard, equivalent to a mature cow (approximately 1,000 lbs. live weight).

Arid. A term applied to regions or climates that lack sufficient moisture for crop production without irrigation. The limits of precipitation vary considerably, according to temperature conditions.

Attainable yield. Yields that would be expected, in the time period considered, from actual application of presently known technology. See Yield, economic maximum.

Base-period price. The average price for an item in a specified period -- such as 1910-14, 1935-39, 1957-59.

Adjusted base-period price. In parity calculations, the average price received by farmers in the most recent 10 years, divided by the index (1910-14=100) of average prices received by farmers for all farm products in the same 10 years.

Basic crops. Crops which are most important in the agricultural economy due to acreage, value, or climate; such as corn, wheat, cotton.

Breeding unit index. The total number of female breeding animals, weighted by the production per head, in a base period, expressed as an index.

Casein. A protein found only in milk. Used for making cheese, paint, glue, and plastics.

Cash-grain farm. A farm on which corn, sorghums, small grains, soybeans, or field beans and peas account for at least 50 percent of the value of farm products sold.

Cellulose. The chief component of plant cell walls. Used to make cloth and paper, among many other products.

Census of Agriculture. A census taken by the Bureau of Census and the U.S. Department of Agriculture every five years -- of number of farms; land in farms; crop acreage and production; livestock numbers and production; farm spending, farm facilities and equipment, farm tenure, value of farm products sold; farm size; type of farm, etc. Data are given for States and counties.

Climate. The sum total of all atmospheric or meteorological influences -- principally temperature, moisture, wind pressure, and evaporation -- which combine to characterize a region and give it individuality by influencing the nature of its land forms, soils, vegetation, and land use.

Commercial farm. Farm with gross sales of at least \$2,500. Farms with gross sales of \$50 to \$2,499 also are classified as commercial if the operator is under 65 and did not work off the farm more than 100 days during the year, and the gross sales were more than all nonfarm income of the operator and his family.

Common Market (European Economic Community). The economic merger of France, West Germany, Italy, Belgium, Netherlands, and Luxembourg to form a unified area in which commerce will be carried on freely -- much as it is among the States of the U.S. The EEC countries will ultimately have no tariffs between themselves, but a common policy with respect to imports from "outside" countries.

Complementary imports. Agricultural items not produced in appreciable commercial volume in the U.S. Examples: Bananas, coffee, rubber, cocoa, tea, spices, and cordage fiber. See Supplementary imports.

Conservation, soil. The preservation of soil against deterioration and loss, by using it within its capabilities and applying conservation practices needed for its protection and improvement. More specifically, soil conservation is using land within the limits of economic practicability, while safeguarding it against impoverishment or depletion by erosion, deposition, exhaustion of plant nutrients (through leaching, excessive cropping or overgrazing), accumulation of toxic salts, burning, water-logging (inadequate drainage), improper cultivation or any type of improper use, or failure to protect the land from soil loss or impairment of productiveness. See Land Capability, Soils.

Consumer Price Index. General measure of retail prices (goods and services) purchased by urban consumers. Includes prices of food, clothing, housing, and transportation.

Contour farming. Conducting field operations -- such as plowing, planting, cultivating, and harvesting -- on the contour, or at right angles to the natural slope.

Cooperative. A self-help organization which farmers own and use to handle the off-the-farm part of their business -- buying farm supplies, marketing their products, furnishing electric and telephone service, and providing business services -- at cost. Essential features are democratic control, limited return on capital, and operation at cost, with distribution of financial benefits to individuals in proportion to their use of association's services.

Copra. Coconut meat dried in the sun.

Corn-hog ratio. Number of bushels of corn that are equal (in value) to 100 pounds of live hogs; i.e., the price of hogs divided by the price of corn. Can be calculated in terms of U.S. average prices received by farmers; prices received by farmers in North Central States; or Chicago prices. A favorable (high) ratio is usually followed by an increase in hog production; and unfavorable (low) ratio, by a decrease.

Corn steepwater. Byproduct of corn wet milling. Used to grow microorganisms for the production of antibiotics.

Corporation farm. A farm that is legally incorporated. This may include family farms as well as larger-than-family farms.

County agent. A professional worker -- jointly employed by the county, State land-grant college, and the U.S. Department of Agriculture -- to bring agricultural and homemaking information to local people and help them meet farm, home, and community problems. Also called extension agents, farm & home advisors, agricultural, home demonstration, and 4-H or youth agents. See Extension Service.

Cover crop. A close-growing crop, grown primarily to protect and improve soil between periods of regular crops, or between trees and vines in orchards and vineyards.

Credit, supervised. A technique pioneered by the Farmers Home Administration and its predecessor agencies. Adequate amounts of low interest credit are combined with intensive supervision provided by local representatives of the agency to help small farmers and their families upgrade their farming and homemaking. In recent years, a number of private lenders have picked up the idea and are providing similar services to borrowers.

Custom work. Specific farm operations performed under contract between the farmer and the contractor. The contractor furnishes labor, equipment, and materials to complete the operation. Custom harvesting of grain, spraying and picking of fruit, and sheep shearing are examples.

Dextran. A synthetic blood plasma extender made from grain by fermentation. Used to alleviate shock and other emergency conditions.

Dialdehyde starch. A chemical derivative of starch developed from cereal grains. Used to improve wet strength of paper products and tanning leather, among other uses.

Disk. A harrow composed of circular plates arranged at an angle with the line of pull. Used to prepare soil for seeding. Also, disk plow; a plow composed of large circular plates. See harrow.

Dry farming. (1) farming in semiarid or arid regions without irrigation.
(2) A system of fallow and stubble mulch, designed to absorb and retain the limited precipitation that occurs.

Enzymes. Substances produced by living cells that can bring about or speed up chemical reactions.

Erosion. The detachment and movement of the solid material of the land surface -- by wind, moving water, ice, landslides, and creep.

Export payment. Government assistance to exporters to enable them to compete in foreign markets. This assistance -- on commodities such as wheat, rice, feed grains, and cotton -- represents the difference between domestic price and "world price."

Extension Service. A cooperative educational agency, whose county agents and State extension specialists serve as the field arm of the U.S. Department of Agriculture, State colleges, and experiment stations. There are State agricultural extension services in each State, and a Federal Extension Service in the U.S. Department of Agriculture. Together they make up the Cooperative Extension Service. See County Agent.

Factory farm. A farm organization in which the operations on a product are separated in different places and are performed at the same time.

Fallow. Crop land (either tilled or untilled) left idle during the growing season. Tillage is usually practiced to control weeds and encourage the storage of moisture in the soil.

Family farm. A farm business in which the operating family does most of the work and most of the managing -- and takes most risks.

Farm. For the 1959 Census of Agriculture, the definition of a farm was based on a combination of the "acres in the place" and the "value of farm products sold." "Place" included all land on which agricultural operations were conducted, under the control of one person or partnership.

Places of 10 or more acres were counted as farms if estimated sales of agricultural products were at least \$50. Places of less than 10 acres were counted as farms if sales of agricultural products for the year were at least \$250. See also Adequate-size farm; Commercial farm; Corporation farm; Factory farm; Family farm; Marginal farm; Subsistence farm.

Farm income. See Gross farm income; Net farm income.

Farmer. One who derives most of his income from farming.

Farming, contract. Producing under an agreement to deliver specified goods and services at a later time.

Federal Land Bank Associations. (formerly National Farm Loan Associations). Local farmer-owned organizations, over 700 in number, through which farmers obtain long-term (up to 40 years) loans.

Feed grain. Any of several grains most commonly used for livestock or poultry feed, such as corn, grain sorghum, oats, barley, and rye.

Fertility, soil. The presence in a soil of the necessary elements, in sufficient amounts, in proper balance and available for the growth of specified plants, when other such factors as light, temperature, and the physical condition of the soil are favorable.

Fertilizer. Any material used to supply one or more of the plant nutrients.

Food, farm-produced. Food products originating on U.S. farms. These include processed products made mainly from farm-produced ingredients, as well as eggs, fresh fruits and vegetables, and other products sold to consumers without processing. Nonfarm foods are those not originating on farms, such as fish.

Food grain. Grain most commonly used for human food; chiefly wheat and rice.

Forward pricing. A system whereby support prices for agricultural products are announced before the planting or breeding season, so that production can be adjusted.

4-H clubs. Organized groups of young people (ages 10-19), through which the Cooperative Extension agents of the U.S. Department of Agriculture and State colleges carry on educational work in farming and homemaking projects, career development, citizenship, leadership, and other youth development activities. The 4-H's stand for Head, Hand, Heart, and Health. See Extension Service.

Fungicide. Any substance used to kill fungi, which are forms of plant life that lack chlorophyll and are unable to make their own food.

Futures contract. An agreement between two people, one who sells and agrees to deliver, and one who buys and agrees to receive, a certain kind and quantity of product to be delivered during a specified delivery month at a specified price.

Great Plains. A level to gently sloping region, spanning the United States from Canada to Mexico, and subject to recurring droughts and high winds. It consists of parts of the Dakotas, Montana, Nebraska, Wyoming, Kansas, Colorado, Oklahoma, Texas, and New Mexico, and lies between the Rockies and approximately the 98th meridian.

Gross farm income. The total gross income realized by farm operators from farming. It includes cash receipts from the sale of farm products, Government payments, value of food and fuel produced and consumed on farms where grown, and rental value of farm dwellings. See Net farm income.

Harrow. A cultivating implement set with spikes, springs, or disks and used to pulverize and smooth soil. See Disk.

Herbicide. Any substance used to kill plants.

Hog-corn price ratio. See Corn-hog ratio.

Hybrid. The offspring of the union between genetically unlike parents, e.g., between male of one variety or specie with the female of another.

Index of prices. See Prices-paid index and Prices-received index.

Integration. The combination (under the management of one firm) of two or more production processes, capable of being operated as separate businesses.

International commodity agreement. An agreement among a number of countries pertaining to international trade of a particular commodity. It usually concerns quantity, maximum and minimum prices, stocks, and production controls. Existing agreements include the International Wheat Agreement and the International Sugar Agreement.

International trade barriers. Obstacles raised by countries against imports. Examples: Tariffs, embargos, quotas, sanitary restrictions.

Land capability. The suitability of land for use without damage. Land capability, as ordinarily used in the U.S., is an expression of the effect of physical land conditions, including climate, on the total suitability for agricultural use without damage. Arable soils are grouped according to their potential and limitations for sustained production of the common cultivated crops. Nonarable soils are grouped according to their potentialities and limitations for the production of permanent vegetation and according to their risks of soil damage if mismanaged.

Land grant college. State colleges and universities, started from Federal Government grants of land to each State, to encourage further practical education in agriculture, homemaking, and the mechanic arts.

Land use planning. The development of plans for the uses of land that will, over a long period, best serve the general welfare, together with the formulation of ways and means to achieve such uses.

Legume. A member of the legume or pulse family. One of the most important and widely distributed plant families. Includes many valuable food and forage species, such as the peas, beans, peanuts, clovers, alfalfas, sweetclovers, lespedezas, vetches, and kudzu. Practically all legumes are nitrogen-fixing plants, and many of the herbaceous species are used as cover and green-manure crops.

Lime. The term lime is commonly used in agriculture to include a great variety of materials, usually composed of the oxide, hydroxide, or carbonate of calcium, or of calcium and magnesium. The most commonly used forms of agricultural lime are ground limestone, hydrated lime, burnt lime, marl, and oyster shells.

Linters. The short fibers remaining on cottonseed after ginning. Too short for usual textile use, they are used for batting and mattress stuffing, and as a source of cellulose.

Malthusian theory of population. Thomas R. Malthus asserted that man could increase his subsistence only arithmetically, whereas population tended to increase geometrically. Thus, population always tended toward the limit set by subsistence, and was contained within that limit by the operation of positive and preventive checks -- such as famine, pestilence, and premature mortality.

Man-year equivalent. A full year of work by an able-bodied man.

Marginal farm. A farm that, on the average, produces barely enough income to maintain the farm and support an average operator at a low level of living.

Market basket of farm foods. The average quantities of domestic farm-produced foods, purchased per family in 1952, for consumption at home, by urban wage-earner and clerical-worker families.

Marketing margin. The difference between the retail price of a product and the farm value. The marketing margin, also known as the farm-retail spread, is the charges made by marketing firms for assembling, storing, processing, transporting, and distributing the product. It may also be the difference between the retail cost of a group of products and their total farm value.

Marketing order (Federal). A means (authorized by, and based on, enabling legislation) to permit agricultural producers to affect the supply, demand and/or price for a particular crop or commodity. The basic purpose is to improve returns to producers through orderly marketing. An order may establish and maintain minimum quality standards, and provide for an orderly flow of products to market to avoid unreasonable fluctuations in supplies and prices.

Mohair. Goat hair, used in making certain kinds of fabric.

Mutual Security Act. Legislation providing for sale of U.S. farm products for foreign currencies. Administered by Agency for International Development. See Public Law 480.

National Forest. A forest area, owned by the Federal Government and used for watershed protection, timber production, recreation, and in some areas, limited grazing of livestock. National Forests are administered by the Forest Service.

National Grassland. An area of land, mainly grass and shrub cover, owned by the Federal Government and administered by the Secretary of Agriculture as part of the National Forest System; for promotion of grassland agriculture, watersheds, grazing, wildlife and recreation.

National Park. An area of unusual scenic or historic interest, owned by the Federal Government, and set aside primarily for recreational use. The scenery, the historic objects, and the wildlife are conserved in such a manner that they will be unimpaired for the enjoyment of future generations. Logging, grazing by livestock, and hunting are prohibited. Regulated fishing is permitted in certain areas.

National Wool Act. Legislation that provides for price support of shorn wool, at an incentive level, to encourage a minimum production of 300 million pounds annually. This is about half of annual domestic use.

Naval stores. Products, such as turpentine and resin obtained from the distillation of crude pine gum.

Nematocide. Any substance used to kill nematodes. These are very small worms, abundant in many soils; important because many of them attack and destroy plant roots.

Net income. The income farm operators realize as a return for labor, investment, and management, after production expenses have been paid.

Total net income. Net income adjusted for the net inventory change in the value of farm crops and livestock. This income figure is comparable with the national income figures of the Department of Commerce.

Nitrogen. A chemical element essential to life. Animals get it from protein foods, plants get it from soil, and some bacteria get it directly from air. One of the primary plant nutrients.

Northern region. See Regions.

Oil crops. The three main oil crops are flaxseed, soybeans, and cottonseed. Sunflower, safflower, castor bean, and corn are also used for making oil.

One-man baling. Use of field pickup hay balers, with self-tying attachments and bale ejectors, that allow one man to harvest hay crops.

Palm kernel. Fruit of the oil palm tree, used to make palm oil for soap, candles, greases.

Parity. A standard used to measure the degree to which farm product prices or farm incomes are in line with what Congress has defined as a fair goal or objective.

Parity prices are the dollars-and-cents prices that will give farm commodities the same purchasing power they had in a selected base period when prices received and paid by farmers were considered to be in good balance.

Farm prices at or above parity means that prices received by farmers are in a more favorable relationship to the prices farmers must pay for the goods and services they buy, than when prices are below parity.

Parity ratio. The ratio of the index of prices received by farmers, to the parity index; or, the average percentage of parity farmers receive for their products.

Performance testing. Measuring of ability rather than appearance. For example, judging dairy cattle on production rather than type-scores.

Pesticide. A substance used to kill a pest; a nonspecific term that includes insecticides, fungicides, herbicides, and nematocides.

Phosphate. An important element in fertilizer. Derived from phosphoric acid, it occurs in bones and certain rocks. A term commonly used to indicate a fertilizer supplying phosphorous.

Plasticizer. An additive to plastics to make them soft and flexible under various conditions of use and temperature.

Potash. Potassium carbonate, an essential nutrient for plant growth and a major element in chemical fertilizers. A term commonly used to indicate a fertilizer supplying potassium.

Prices-paid index. The index of prices farmers pay for goods and services (including interest, taxes, and farm wage rates) used for producing farm products and in farm family living (1910-14=100). Also referred to as the Parity Index.

Prices-received index. An index of average prices received by farmers, for 55 of the most important products sold by farmers (1910-14=100).

Production credit associations. Associations, owned by their farmer-borrowers, that provide operating loans for periods up to one year and capital loans for periods up to seven years, from funds obtained from investors in the money markets. There are 486 PCA's.

Production expenses. Total cash outlays for production (excluding capital expenditures), plus "noncash" outlays, such as depreciation.

Public Law 480. A law enacted to expand agricultural trade between the U.S. and friendly nations, and to make most efficient use of agricultural abundances to further U.S. foreign policy. Through four titles, it provides:

Title I -- Sale of U.S. farm products for foreign currencies used for the mutual benefit of the U.S. and the purchasing country.

Title II -- Use of abundant agricultural products (held by the Commodity Credit Corporation) for famine and similar relief abroad. Administered by AID (Agency for International Development).

- Title III -- Two programs: One provides for distribution of abundant foods to needy persons in the U.S. and abroad. The other provides for barter of CCC commodities for strategic and other materials, goods, and equipment the U.S. needs.
- Title IV -- For long-term supply and dollar credit sales of U.S. agricultural products. See Mutual Security Act.

Pulpwood. Wood used in the manufacture of paper and synthetic fibers.

Quota crop. A crop for which marketing quotas are provided, under the Agricultural Adjustment Act of 1938, as amended. These crops are tobacco, wheat, rice, cotton, and peanuts.

Ranch. An establishment, including land and facilities, used for the production of livestock. Accepted western usage generally refers to the headquarters facilities, pastures, and other land as the ranch, as distinguished from range. Loosely, a western farm; as, a fruit ranch.

Rangeland. Land that produces primarily native forage suitable for grazing by livestock. Also, forest land, producing forage. Usually, relatively extensive areas of land suitable for grazing, but not suitable for cultivation -- especially in arid, semiarid, or forested regions.

Regions.

Northern

Northeast -- Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

East North Central -- Illinois, Indiana, Michigan, Ohio, Wisconsin.

West North Central -- Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.

Southern

South Atlantic -- Florida, Georgia, North Carolina, South Carolina, Virginia, West Virginia.

East South Central -- Alabama, Kentucky, Mississippi, Tennessee.

West South Central -- Arkansas, Louisiana, Oklahoma, Texas.

Western

Mountain -- Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming.

Pacific -- Alaska, California, Hawaii, Oregon, Washington.

Resin, natural. A crude, hard gum, naturally exuded from trees, usually pine trees. Resin is processed into rosin and turpentine. Rosin and turpentine are also manufactured from pine wood. Rosin is used in varnish and soap and as a dryer for oil.

Resources. Available means for production. Land, labor, and capital are the basic means of production on farms.

Rosin. See Resin.

Rotation, crop. The growing of different crops, in recurring succession, on the same land.

Roughage. Feed, such as hay and silage, with high fiber content and low total digestible nutrients.

Section 32. A section of Public Law 320 (approved August 24, 1935) which authorizes use of customs receipts funds to encourage increased consumption of agricultural commodities by means of purchase, export, and diversion programs. The Food Stamp Plan is also carried out with Section 32 funds.

Sharecropper. Tenant who shares crops, livestock, or livestock products with the landlord, and who usually works under close supervision of the landlord.

Silage. A crop that has been preserved in a moist, succulent condition by partial fermentation in a tight container (silo). The chief silage crops are corn, sorghum and various legumes and grasses.

Soil. A dynamic natural body on the surface of the earth in which plants grow, composed of mineral and organic materials and living forms. In the United States about 70,000 kinds of soil are recognized in the nationwide system of classification. Each has a unique set of characteristics and a unique potential for use.

A soil series is a group of soils alike in all those properties that influence the behavior of the soil in its natural environment. They are given proper names from place names within the areas where they occur. Thus Norfolk, Miami, and Houston are names of well-known soil series.

A soil type is a group within a series according to the texture of the surface soil, such as Miami silt loam. Many series have only one type.

A phase is a subdivision of a soil type on the basis of some factor of importance to its use under culture. Thus Miami silt loam, undulating, and Miami silt loam, sloping, are phases within Miami silt. Other phases are those indicating stoniness, depth to rock, and so forth.

Soil Bank. A program authorized by Congress in 1956, establishing an Acreage Reserve, until 1958, provided that growers be compensated each year to reduce production of certain crops. The Conservation Reserve provided for rental payments to farmers who retired cropland for three to 10 years. Legal authority to take additional land into the Conservation Reserve ended in 1960, but contracts remain in effect.

Soil conservation district. An organization, created under State Law, for developing and carrying out a program of soil and water conservation within its geographic boundaries. In most States, a soil conservation district is a legal subdivision of the State Government, autonomously controlled, with public powers.

Sorghum. A cereal grass, used mainly for feed grain or silage. Often grown in corn areas.

Southern region. See Regions.

Soybeans. A legume crop, native to the Orient, used mainly in the U.S. for high protein feed and oil.

Starch. A complex carbohydrate found in most plant seeds, bulbs, and tubers.

Stilbestrol. An organic compound that, when consumed by animals, acts as an estrogen or female hormone, and promotes growth. Used for fattening meat animals.

Stripcropping. Growing crops in a systematic arrangement of strips or bands, to serve as vegetative barriers to wind and water erosion. See Contour farming.

Stubble mulch. A protective cover provided by leaving plant residues of any previous crop as a mulch on the soil surface when preparing for the following crop.

Subsistence farm. A low-income farm, where the emphasis is on production for use of the operator and his family.

Supplementary imports. Imports that supplement output of U.S. agriculture. Examples: Cattle, meat, fruit, vegetables, and tobacco. See Complementary imports.

Synthetics. Artificially produced products, that may be similar to natural products.

Tall oil. Byproduct from the manufacture of chemical wood pulp. Used in making soaps and for various industrial products.

Technology. The application of new techniques and innovations.

Tobacco (types)

Air-cured -- Cured under natural atmospheric conditions.

Artificial heat is sometimes used to control excess humidity during the drying period.

Fire-cured -- Cured under artificial atmospheric conditions, by the use of open fires, from which the smoke and fumes of burning wood are partly absorbed by the tobacco.

Flue-Cured -- Cured under artificial atmospheric conditions, by regulating heat and ventilation, without allowing smoke or fumes from the fuel to come in contact with the tobacco.

Trace element. A chemical substance that occurs in minute amounts in plants. Some are beneficial to plant and animal growth, some may exert detrimental effects, and some have no known effects.

Tung nut. A tree nut, grown for industrial drying oil.

Unit cost. The total production cost of a single item. The total cost (fixed plus variable) divided by the number of items produced.

Upland cotton. A type of cotton, native to the United States, Mexico, and Central America. Includes all cotton grown in continental United States except Sea Island and American-Egyptian cotton. Staple length of upland cotton ranges from 3/4 inch to 1-3/32 inches.

Utilization research. Study of how a commodity can be used, in contrast with production research, which is study of how a commodity can be produced more efficiently.

Vinyl stearate. A plasticizer made from animal fats and acetylene. This material is chemically bound into a plastic, to keep it soft and flexible.

Watershed. (1) The total land area, regardless of size, above a given point on a waterway, that contributes runoff water to the flow at that point. (2) A major drainage-area subdivision of a drainage basin. On the basis of this concept, the United States is generally divided into some 18 major drainage areas, 160 principal river drainage basins, containing some 12,700 smaller watersheds.

Waterway. A natural course for the flow of water.

Western region. See Regions.

Yield, economic maximum. Yield based on full efficient economic application of presently known technology. Does not take into account limitations on management, materials, equipment, capital and experience. See Attainable yield.

Appendix 3

BIBLIOGRAPHY AND ADDITIONAL MATERIAL

Publications marked with an asterisk (*) are available (at the price given) from the Superintendent of Documents, Government Printing Office, Washington, D. C. , 20250.

Single copies of all others listed are available free while the supply lasts. Requests should be addressed to the Office of Information, U. S. Department of Agriculture, Washington, D. C., 20250.

For a complete list of free and for sale publications, ask for a copy of List No. 11, List of Available Publications of the U. S. Department of Agriculture.

For a listing of Periodic Reports of Agricultural Economics, write to Division of Information, OMS, Agricultural Economics, U. S. Department of Agriculture, Washington, D. C., 20250.

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